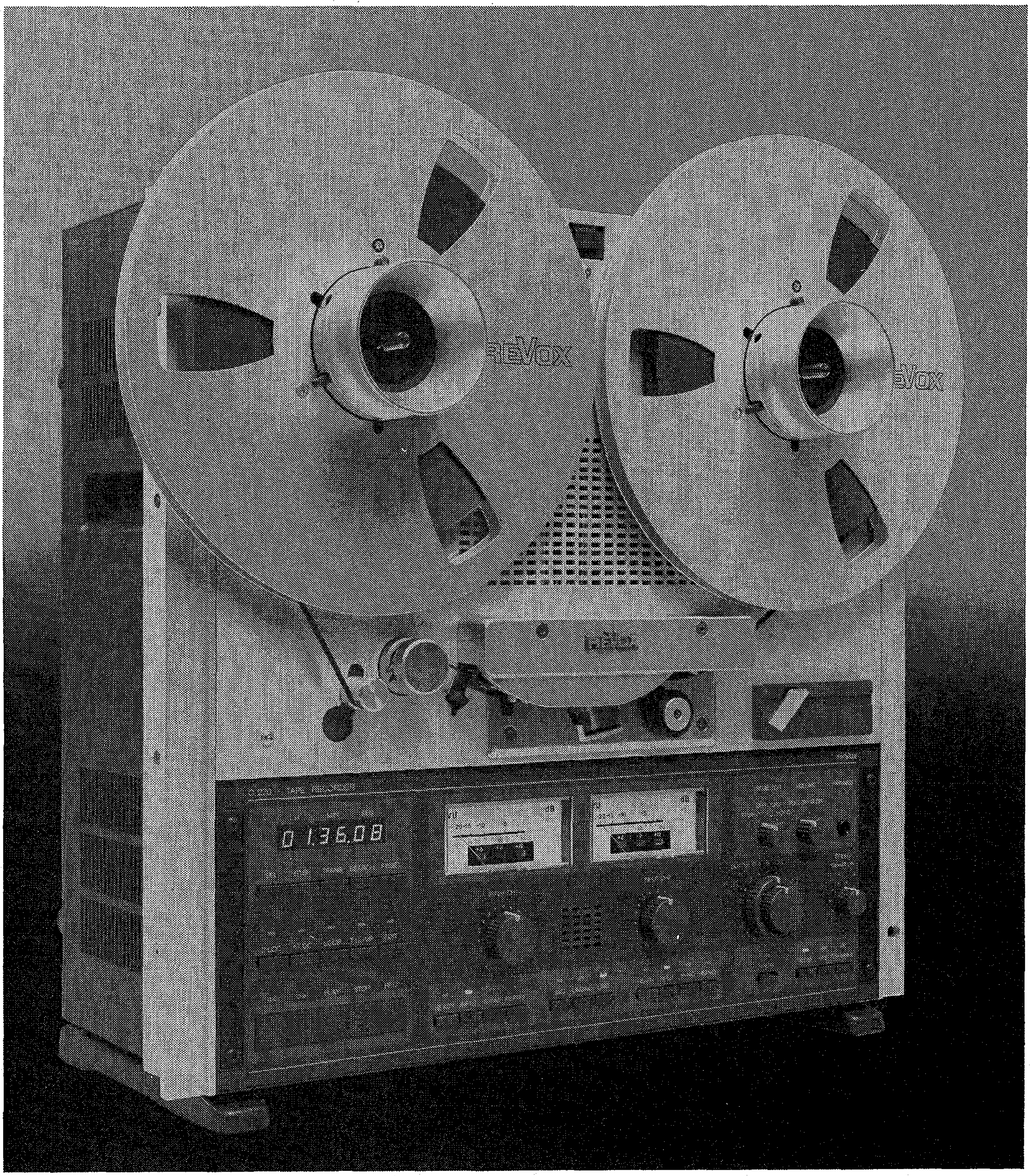
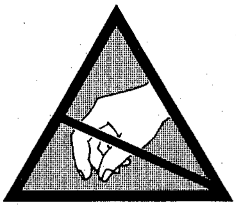
STUDER REVOX

C270

SERVICEANLEITUNG
SERVICE INSTRUCTIONS
INSTRUCTIONS DE SERVICE





Behandlung von MOS-Bauteilen

MOS-Bausteine sind besonders empfindlich auf elektostatische Ladungen.
Folgendes ist daher zu beachten:

- Elektostatisch empfindliche Bauteile werden in Schutzverpackungen gelagert und transportiert.
- Jeder Kontakt der Elementanschlüsse mit elektrostatisch aufladbaren Materialen ist unbedingt zu vermeiden.
- Anschlüsse dürfen nur berührt werden, wenn das Handgelenk geerdet ist.
- Als Arbeitsunterlage ist eine geerdete, leitende Matte zu verwenden.
- Printkarten nicht unter Spannung herausziehen oder einstecken.

Handling MOS components

MOS components are extremely sensitive to static charges.
Please observe therefore the following regulations:

- Components sensitive to static charges are stored and shipped in protective packagings. On the package you find the above mentioned symbol.
- Avoid any contact of connector pins with foam packages and foil made of similar chargeable package material.
- Don't touch the connector pins, when your wrist is not grounded with conducting wristlet.
- Use a grounded conducting mat when working with sensitive components.
- Never plug or unplug PCBs containing sensitive components when the set is switched on.

Manipulation des composantes MOS

Les composantes MOS sont extrêmement sensibles à l'électricité statique.
Veuillez donc suivre les conseils:

- Les composantes MOS sont stockés et transportés dans des emballages protecteurs avec le symbole susmentionné.
- Evitez tout contact entre les broches des circuits et matériaux susceptible de porter une charge électrostatique.
- Ne touchez pas les broches des circuits si votre poignet n'est pas relié à la terre par bracelet conducteur.
- Utilisez un tapis conducteur relié à la terre quand vous travaillez avec des composants sensibles.
- Ne jamais enficher ou retirer des circuits imprimés si l'appareil est sous tension.

Prepared and edited by
STUDER REVOX
TECHNICAL DOCUMENTATION

Althardstrasse 10
CH-8105 Regensdorf-Zurich
Switzerland

We reserve the right to make alterations

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REVOX C270 - TAPE RECORDER

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1.1 NETZANSCHLUSS

Ueberprüfen Sie den eingestellten Wert des Netzspannungswählers, er muss mit der örtlichen Netzspannung übereinstimmen.

Ansonsten ist der Netzspannungswähler entsprechend einzustellen und der Wert der Primär-Sicherung zu überprüfen.

Sicherungswert:

100 ... 140 V AC: T 2,5 A / 250V (slow)

200 ... 240 V AC: T 1,25A / 250V (slow)

1.2 BEDIENUNGSELEMENTE

ELEMENT	FUNKTION
[1] POWER:	Netzschalter, schaltet das Gerät ein und aus.
[2]:	Linker Wickelteller, Abwickelmotor.
[3]:	Rechter Wickelteller, Aufwickelmotor.
[4]:	Zählrolle für Echtzeitzähler.
[5]:	Lichtschranke, für die Erkennung des transparenten Vorspannbandes oder eines Bandrisses.
[6]:	Bandfühlhebel, kontrolliert den Bandzug.
[7]:	Echtzeitzähler mit Anzeige der effektiven Spielzeit in Stunden, Minuten und Sekunden sowie von Systemparametern.
[8] SEL:	Auswahltaste, bringt den Inhalt des Adress-Locators zur Anzeige, selektiert eine Ziffer der Anzeige für eine Veränderung mit der Taste STEP [9].
[9] STEP:	Schritt-Taste, verändert die mit SEL [8] ausgewählte Ziffer der Anzeige in Einzelschritten.
[10] TRANS:	Taste zur Speicherung der im Echtzeitzähler angezeigten Bandposition im Adress-Locator (A-LOC). Der Wert der Anzeige kann vorgängig mit den tasten SEL [8] und STEP [9] verändert werden.
[11] SEARCH:	Positioniert das Tonband auf eine mit den Tasten SEL [8] und STEP [9] in die Anzeige gebrachte Adresse ohne den Adress-Locator (A-LOC) mit der neuen Adresse zu überschreiben.
[12] RESET:	Rückstelltaste, setzt den Echtzeitzähler auf Null (00.00.00).
[13] Z-LOC:	Zero-Locator, positioniert das Tonband auf die Bandadresse 00.00.00. Der Wiedergabe-Betrieb kann dabei vorgewählt werden.
[14] A-LOC:	Adress-Locator, positioniert das Tonband auf die mit der Taste TRANS [10] im A-LOC abgespeicherten Bandadresse. Der Wiedergabebetrieb kann dabei vorgewählt werden.
[15] LOOP:	Aktiviert den Schleifenbetrieb. Das Gerät spielt den Bandabschnitt zwischen der Bandadresse 00.00.00 und der im A-LOC stehenden Adresse immer wieder im Wiedergabebetrieb ab. Die Adresse im A-LOC kann auch negativ sein. Abgebrochen wird die Funktion durch erneuten Druck auf die Taste LOOP oder auf eine der Laufwerkstasten.

[16] T-DUMP:	Schaltet den "Papierkorb"-Betrieb (Tape Dump) ein und aus. Der rechte Wickelmotor wird ausgeschaltet; mit der Funktion PLAY [20] können nicht benötigte Bandabschnitte in den "Papierkorb" gespielt werden.
[17] EDIT:	Schaltet den Editier-Betrieb ein und aus. Dabei kann durch drehen des rechten Wickeltellers oder mit den Tasten « [18] oder » [19] das Tonband zum Auffinden einer bestimmten Passage bei geöffnetem Wiedergabezweig hin und her bewegt werden.
[18] « :	Rückspultaste zum schnellen Rückspulen des Tonbandes. Das Band wird auf den linken Bandwickel aufgewickelt.
[19] » :	Vorspultaste zum schnellen Vorspulen des Tonbandes. Das Band wird auf den rechten Bandwickel aufgewickelt.
[20] PLAY:	Wiedergabe-Taste, spielt das Tonband ab. Zusammen mit der Taste REC [22] betätigt wird der Aufnahmebetrieb gestartet.
[21] STOP:	Drücken dieser Taste beendet alle Laufwerk-Funktionen und alle angewählten Betriebsarten ausser "Papierkorb"-Betrieb.
[22] REC:	Zusammen mit der Taste PLAY [20] betätigt wird das Gerät in Aufnahme gestartet. Mit dem oder den auf READY geschalteten Kanälen können Aufnahmen gemacht werden.
[23]:	VU-Meter zur Anzeige der Aussteuerung von Kanal 1 (links) mit drei LED-Spitzenwert-Anzeigen für +6, +9 und +12 dB.
[24] READY:	Aufnahme Bereitschaft für Kanal 1 (links), die rote LED oberhalb der Taste blinkt. Während einer Aufnahme, durch Drücken der Tasten REC [22] und PLAY [20] aktiviert, brennt die LED dauernd.
[25] INPUT:	Ausgangs-Wahlschalter. Auf dem VU-Meter [23] wird das Eingangssignal angezeigt und ist über die Ausgänge abhörbar.
[26] SYNC:	Ausgangs-Wahlschalter. Die Wiedergabe erfolgt ab Aufnahme-Tonkopf mit eingeschränktem Wiedergabe-Frequenzgang. Damit ist eine synchrone Bespielung von Kanal 2 zu einer bestehenden Aufnahme auf Kanal 1 möglich.
[27] REPRO:	Ausgangs-Wahlschalter. Die Wiedergabe erfogt ab Wiedergabe-Tonkopf. Diese Funktion ist auch während einer Aufnahme aktivierbar um die Qualität der Aufzeichnung laufend zu kontrollieren (Hinterband-Kontrolle). Das VU-Meter [23] und die Monitor-Ausgänge verfügen ebenfalls über das Signal ab Wiedergabe-Tonkopf.
[28] INPUT CH 1:	Eingangs-Pegelsteller für Kanal 1. Beeinflusst in der Stellung UNCAL [30] den Aufnahme-Pegel (Aussteuerung) von Kanal 1.
[29] MIC:	Eingangs-Wahlschalter. Aktiviert die Aufnahme über Mikrofon (beide Kanäle). Diese Funktion ist nur aufrufbar, wenn das Gerät mit der Option MIC/LINE SWITCH BOARD nachgerüstet ist.
[30] UNCAL:	Aktiviert den unkalibrierten Aufnahmebetrieb. Der Aufnahme-Pegel ist über die Pegelsteller INPUT CH 1 [28] und INPUT CH 2 [37] beeinflussbar. Diese Betriebsart wird durch den Eingangs-Wahlschalter MIC [29] automatisch aktiviert.
[31] LINE:	Eingangs-Wahlschalter. Aktiviert die Aufnahme über die Eingänge LINE INPUT CH 1 und LINE INPUT CH 2. In dieser Betriebs-Art kann mit kalibriertem oder unkalibriertem (UNCAL [30]) Pegel gearbeitet werden.
[32]:	VU-METER zur Anzeige der Aussteuerung von Kanal 2 (rechts) mit drei LED-Spitzenwert-Anzeigen für +6, +9 und +12 dB.
[33] READY:	Aufnahme-Bereitschaft für Kanal 2 (rechts), die rote LED oberhalb der Taste blinkt. Während einer Aufnahme, durch Drücken der Tasten REC [22] und PLAY [20] aktiviert, brennt die LED dauernd.
[34] INPUT:	Ausgangs-Wahlschalter. Auf dem VU-Meter [32] wird das Eingangssignal angezeigt und ist über die Ausgänge abhörbar.
[35] SYNC:	Ausgangs-Wahlschalter. Die Wiedergabe erfolgt ab Aufnahme-Tonkopf mit eingeschränktem Wiedergabe-Frequenzgang. Damit ist eine synchrone Bespielung von Kanal 1 zu einer bestehenden Aufnahme auf Kanal 2 möglich.
[36] REPRO:	Ausgangs-Wahlschalter. Die Wiedergabe erfolgt ab Wiedergabe-Tonkopf. Diese Funktion ist auch während einer Aufnahme aktivierbar um die Qualität der Aufzeichnung laufend zu kontrollieren (Hinterband-Kontrolle). Das VU-Meter [32] und die Monitor Ausgänge verfügen ebenfalls über das Signal ab Wiedergabe-Tonkopf.

[37] INPUT CH 2:	Eingangs-Pegelsteller für Kanal 1. Beeinflusst in der Stellung UNCAL [30] den Aufnahme-Pegel (Aussteuerung) von Kanal 2.
[38] OUTPUT CH 1/2:	Ausgangs-Pegelsteller für Kanal 1 (innerer Knopf) und Kanal 2 (äusserer Ring). In der Stellung UNCAL [39] des Wiedergabe-Verstärkers kann mit diesen Pegelstellern der Ausgänge LINE OUTPUT CH1 und LINE OUTPUT CH 2 beeinflusst werden.
[39] UNCAL:	Aktiviert den unkalibrierten Wiedergabe-Betrieb. Der Ausgangs-Pegel ist über die Pegelsteller OUTPUT CH 1 und OUTPUT CH 2 [38] beeinflussbar.
[40] SLOW:	Schaltet auf die tiefere (langsamere) der beiden verfügbaren Bandgeschwindigkeiten um. Bei Dauerdruck wird die nominale Bandgeschwindigkeit im Display [7] in der Grössenordnung "ips" (Inch pro Sekunde) angezeigt.
[41] FAST:	Schaltet auf die höhere (schnellere) der beiden verfügbaren Bandgeschwindigkeiten um. Bei Dauerdruck wird die nominale Bandgeschwindigkeit im Display [7] in der Grössenordnung "ips" (Inch pro Sekunde) angezeigt.
[42] VARIABLE:	Schaltet in den "Varispeed"-Modus (variable Bandgeschwindigkeit). Mit dem Potentiometer SPEED DEVIATION [43] kann die Bandgeschwindigkeit verändert werden.
[43] SPEED DEVIATION:	Potentiometer zur stufenlosen Veränderung der Bandgeschwindigkeit im "Varispeed"-Modus (Taste VARIABLE [42]) in einem Bereich von -33% bis +50% der gewählten Nominalgeschwindigkeit.
[44] SELECTOR:	Monitor-Wahlschalter. Beeinflusst die Wiedergabe über den Monitor-Lautsprecher und über die Monitor-Ausgänge. Die Ausgänge LINE OUTPUT CH 1 und LINE OUTPUT CH 2 bleiben dadurch unbeeinflusst.
[45] PHONES:	Kopfhörerbuchse. Durch Einstecken eines Kopfhörers wird der eingebaute Monitor-Lautsprecher ausgeschaltet.
[46] VOLUME:	Lautstärke-Regler. Verändert die Lautstärke des eingebauten Monitor-Lautsprechers sowie des Kopfhörer-Ausganges. Durch Herausziehen des Knopfes wird der Monitor-Lautsprecher eingeschaltet und durch Hineindrücken wieder ausgeschaltet.
[47]:	Andruckrolle. Sie presst das Tonband an die Tonmotor-Achse (Capstan-Achse). Ein einwandfreier Zustand dieser Rolle (keine Beschädigung, sauber) sorgt für optimalen Bandlauf.
[48]:	Bandschere und Klebeschiene. Mit ihr kann das Band bequem und sauber geschnitten und wieder geklebt werden.
[49]:	Schneide-Marke. Wird das Band an dieser Stelle gefasst, und derart in die Klebeschiene [48] eingelegt, dass die Stelle, an der sich die Schneide-Marke befunden hat mit der rechten Gehäuse-Seite übereinstimmt, so befindet sich die Bandstelle, welche sich zuvor vor dem Kopfspalt des Wiedergabe-Kopfes befunden hat, exakt unter der Bandschere.
[50]:	Befestigungs-Schrauben der Bedienungsfront.

1.3 ANSCHLUSSFELD

ANSCHLUSS	FUNKTION
[51] LINE OUTPUT CH 2:	Ausgang für Kanal 2. Der Ausgangs-Pegel kann mit dem Pegelsteller OUTPUT CH 1/2 [38], in der Stellung UNCAL [39], beeinflusst werden.
[52] LINE OUTPUT CH 1:	Ausgang für Kanal 1. Der Ausgangs-Pegel kann mit dem Pegelsteller OUTPUT CH 1/2 [38], in der Stellung UNCAL [39], beeinflusst werden.
[53] MONITOR:	Ausgang für einen zusätzlichen Monitor-Verstärker mit Lautsprechern.
[54] FADER/SYNC FREE HEAD:	Eingang für ein TTL-Signal (0V, +5V) zur externen Steuerung der Bandgeschwindigkeit im Bereich von -33% bis +50%. Steuerfrequenz der Nominal-Geschwindigkeit: 9,6 kHz. ▪ Fader-Start Eingang ▪ Free-Head Eingang
[55] RS 232:	Serieller Steueranschluss (RS 232, 9600 Baud) für die Verbindung mit einem PC.
[56] LINE INPUT CH 2:	Leitungseingang Kanal 2 (XLR, symmetrisch) für den Anschluss einer Signalquelle (Verstärker, Mischpult).
[57] LINE INPUT CH 1:	Leitungseingang Kanal 1 (XLR, symmetrisch) für den Anschluss einer Signalquelle (Verstärker, Mischpult).
[58] MIC INPUT CH 2:	Mikrofoneingang Kanal 2 (XLR, symmetrisch).
[59] MIC INPUT CH 1:	Mikrofoneingang Kanal 1 (XLR, symmetrisch).
[60] AC POWER:	Netzspannungs-Anschluss und Netzspannungs-Wähler.

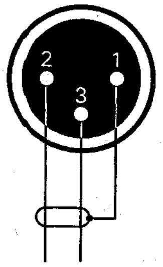
1.4 STECKERBELEGUNG

XLR Buchsen, IEC 268-14:

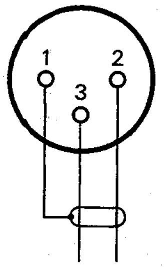
1 Audio-Masse
2 A-Leitung (heiss)*
3 B-Leitung (kalt)

* Die A-Leitung ist heiss, wenn die XLR-Buchsen asymmetrisch beschaltet werden.

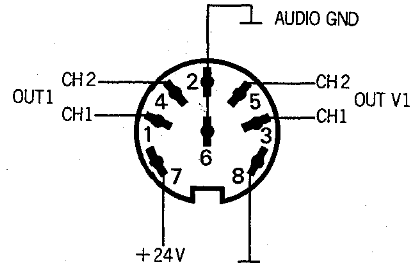
XLR IN [58] [59]



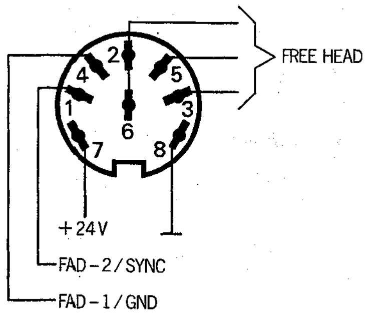
XLR OUT [51] [52]



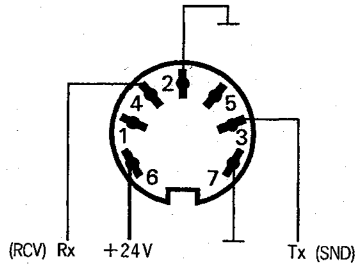
MONITOR [53]

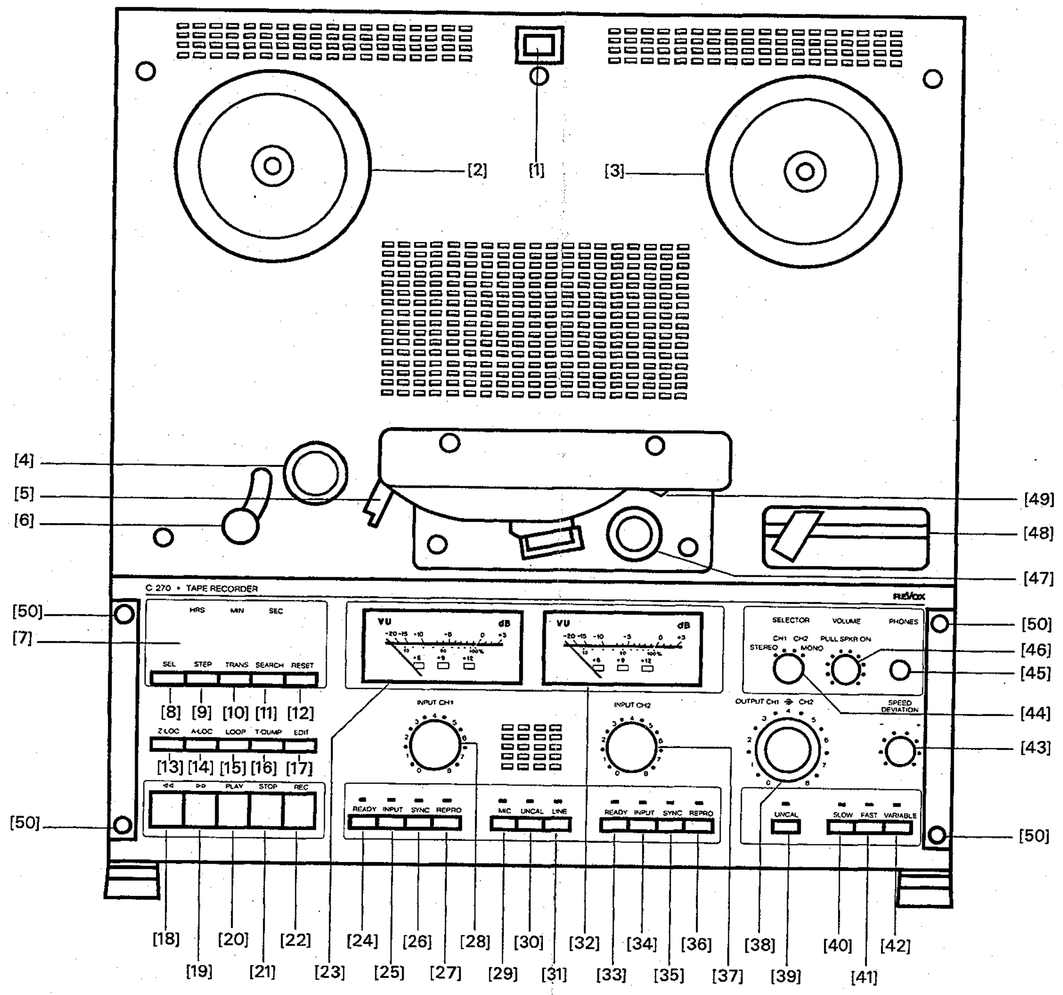

AUDIO GND
OUT1
CH2
CH1
CH2
CH1
OUT V1
1
2
3
4
5
6
7
8
+24V

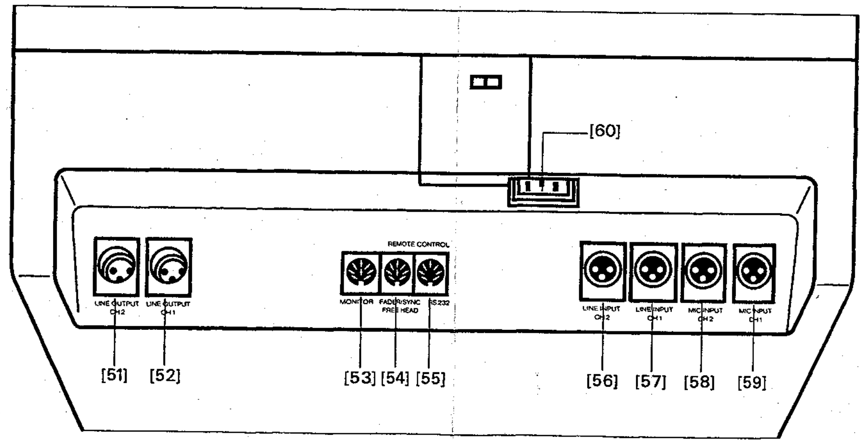
FADER/SYNC [54]
FREE HEAD


FREE HEAD
1
2
3
4
5
6
7
8
+24V
FAD-2/SYNC
FAD-1/GND

RS-232 [55]


1
2
3
4
5
6
7
(RCV) Rx
+24V
Tx (SND)


[1]
[2]
[3]
[4]
[5]
[6]
[49]
[48]
[47]
C 270 • TAPE RECORDER
REVOX
[50]
[7]
HRS MIN SEC
SEL STEP TRANS SEARCH RESET
[8] [9] [10] [11] [12]
Z-LOC A-LOC LOOP T-DUMP EDIT
[13] [14] [15] [16] [17]
VU dB
INPUT CH1
INPUT CH2
READY INPUT SYNC REPRO
MIC UNCAL LINE
SELECTOR VOLUME PHONES
STEREO MONO
SPEED DEVIATION
OUTPUT CH1 CH2
UNCAL
SLOW FAST VARIABLE
[50]
[46]
[45]
[44]
[43]
[50]
[18] [19] [20] [21] [22] [23] [24] [25] [26] [27] [28] [29] [30] [31] [32] [33] [34] [35] [36] [37] [38] [39] [40] [41] [42]


[60]
REMOTE CONTROL
LINE OUTPUT CH2
LINE OUTPUT CH1
MONITOR
FADER/SYNC FREE HEAD
RS232
LINE INPUT CH2
LINE INPUT CH1
MIC INPUT CH2
MIC INPUT CH1
[51] [52]
[53] [54] [55]
[56] [57] [58] [59]

2. DEMONTAGE-ANLEITUNG

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2.1 ALLGEMEINE HINWEISE

Achtung:
Vor dem Entfernen von Gehäuseteilen und Elektronikbaugruppen, muss das Gerät vom Netzanschluss getrennt werden!

Bei Aus- und Einbauarbeiten elektronischer Komponenten sind die eingangs dieser Service-Anleitung aufgeführten Richtlinien zur Behandlung von MOS-Bauteilen zu beachten.

2.1.1 Schmieren

Alle Lager sind für ihre Lebensdauer geschmiert und bedürfen keiner Wartung. Die Schmierung der übrigen Gleitstellen ist auf ein Minimum beschränkt.

2.1.2 Benötigtes Werkzeug

1 Schraubendreher	Grösse	1
1 Kreuzschlitz-Schraubendreher	Grösse	1
1 Kreuzschlitz-Schraubendreher	Grösse	2
1 Innensechskant-Schlüssel	Grösse	2,0
1 Innensechskant-Schlüssel	Grösse	2,5
1 Flachzange		
1 "ESE"-Arbeitsplatzausrüstung	Best.Nr.:	46200

Empfehlung: Arbeitsplatz mit einem Baumwolltuch o.ä. auslegen, um Kratzspuren am Gerät zu verhindern.

2.1.3 Zusammenbau

Der Zuammenbau erfolgt sinngemäss in umgekehrter Reihenfolge der nachfolgend beschriebenen Demontageanleitung, unter Beachtung der angeführten **Montagehinweise.**

2.2 GEHÄUSE

2.2.1 Gehäusekorb

- C270 vorsichtig auf die Front legen und beidseitig 4 Innensechskantschrauben [1] des Gehäusekorbes bzw. des 19 Zoll Rackwinkels sowie die 4 Kreuzschlitzschrauben [2] der Gerätefüsse lösen.
- Gehäusekorb gleichmässig vom Gerät entfernen.

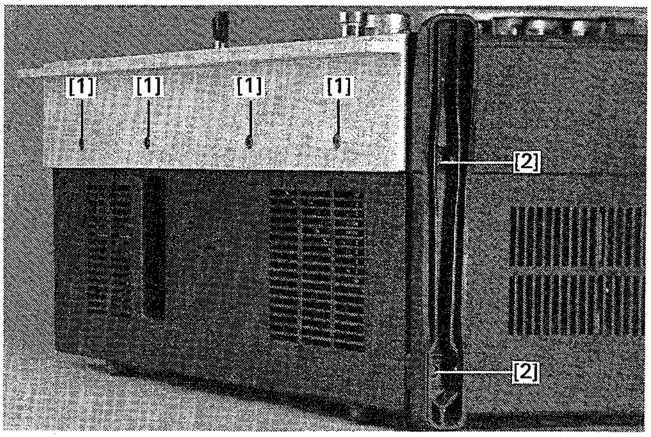


Fig. 1

Achtung:
Die 2 Gerätefüsse müssen nach dem Entfernen des Gehäusekorbes wieder montiert werden (Umkippgefahr).

2.2.2 Laufwerkabdeckung

- 2 Schrauben [3] der Bandschere lösen und diese entfernen.
- 2 Schrauben [4] der Tonkopfabdeckung lösen und entfernen.
- 2 Senkkopfschrauben [5] lösen und das Gussteil entfernen.
- Senkkopfschrauben [6] und Linsenkopfschrauben [7] lösen, danach Laufwerkabdeckung abheben.

Montagehinweis:
- Beim Einbau darauf achten, dass die Abschirmung am Wiedergabekopf hochgeklappt wird.

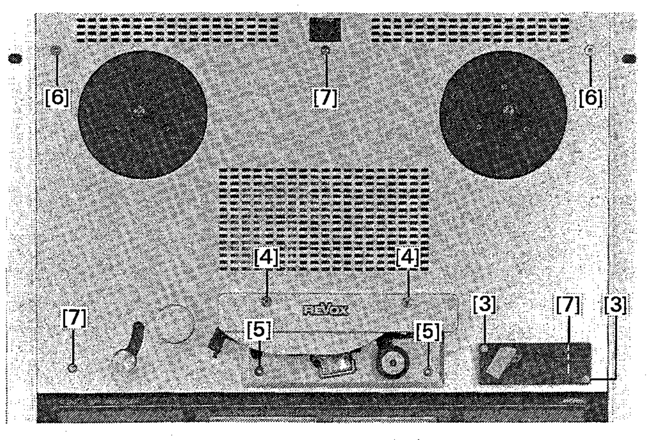


Fig. 2

2.3 BEDIENUNGSEINHEIT

HINWEIS:
Durch das Lösen der 4 Schrauben [8] kann die Bedienungseinheit aufgeklappt werden. Die Parallelführung ermöglicht durch Hineindrücken gegen das Gerät ein Arretieren der Bedienungseinheit gemäss Fig. 3. Somit wird für Servicearbeiten eine optimale Zugänglichkeit gewährleistet.

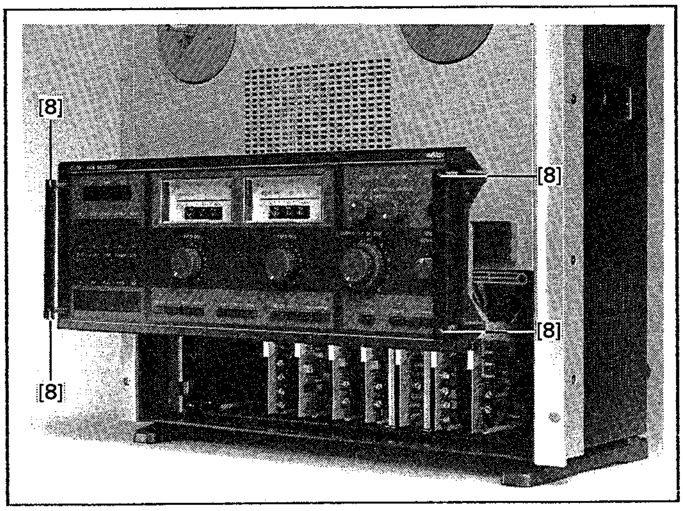


Fig. 3

- Gehäusekorb entfernen (siehe 2.2.1).
- 4 Schrauben [8] der Bedienungseinheit lösen.
- Die 17 Schrauben [9] des AUDIO BASIS BOARDs lösen. Den Board ca. 2 cm ausfahren. Durch den entstandenen Spalt können nun die codierten Stecker [10,11,12] auf dem AUDIO BASIS BOARD gelöst werden. Je ein weiterer Stecker befindet sich auf dem CONTROL BOARD 1.777.400 sowie auf dem CAPSTAN SERVO BOARD 1.777.410.
Die Kabelverbindung zum CAPSTAN SERVO BOARD wird mit Vorteil im Bereich der Bedienungseinheit aufgetrennt und bei der Montage mit einer Klemmverbindung versehen.

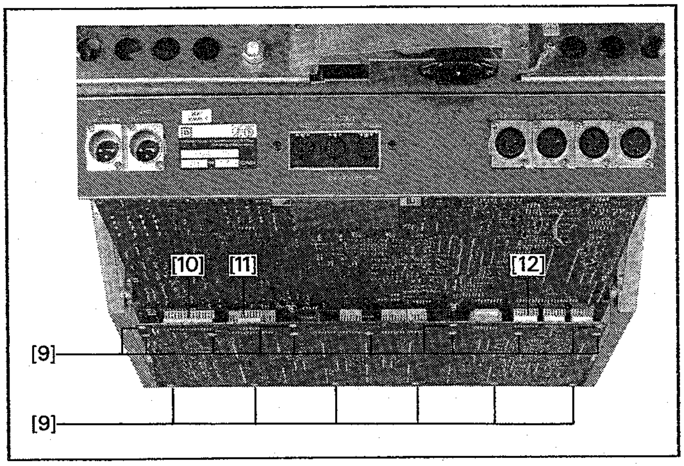


Fig. 4

- Massekabel [13] lösen.
- An der Befestigung der Bedienungseinheit beidseitig 2 Schrauben [14] lösen, danach kann die Bedienungseinheit aus dem Chassis gehoben werden.

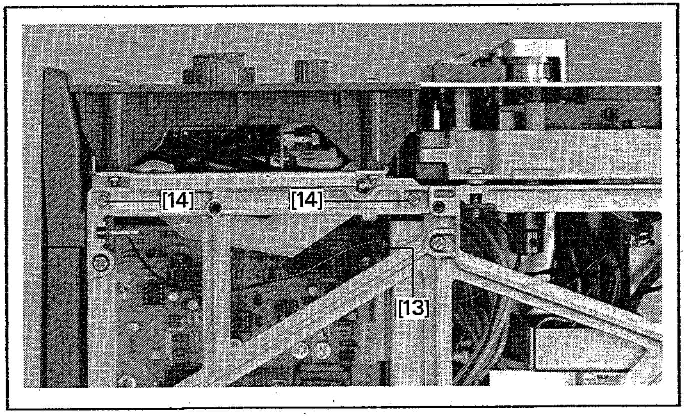


Fig. 5

- Die nun sichtbaren Kabelbefestigungen [15] lösen, Kabel ausschlaufen und die kompl. Bedienungseinheit entfernen.

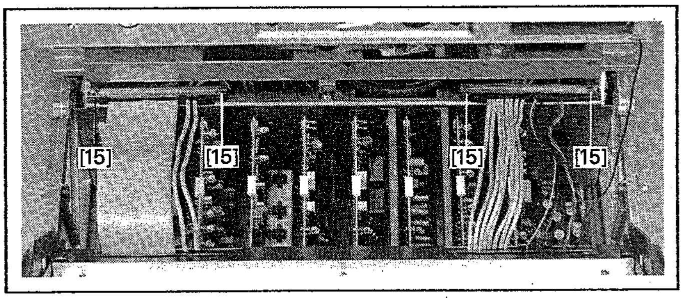


Fig. 6

2.3.1 VU-PEAK BOARD

- Bedienungseinheit ausbauen (siehe 2.3).
- Beidseitig 4 Schrauben [16] der Bedienungsrückwand sowie die 4 Schrauben [17] der beiden Kabeldurchführungen lösen.
- An der Innenseite 1 Schraube [18], zur Freilegung der 3 Massekabel lösen.

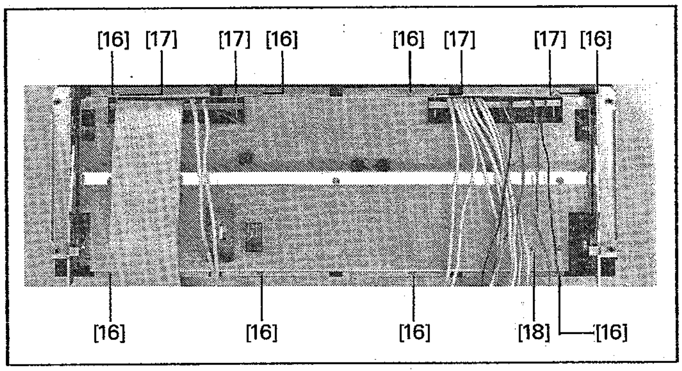


Fig. 7

- 4 Printbefestigungsschrauben [19] des VU-PEAK BOARD 1.777.460 lösen.
- 5 Schnappklammern [20] sukzessive, von einer Seite beginnend, aus ihren Eingriffstellungen biegen und währenddessen den VU-PEAK BOARD mit dosiertem Krafteinsatz nach oben abheben.

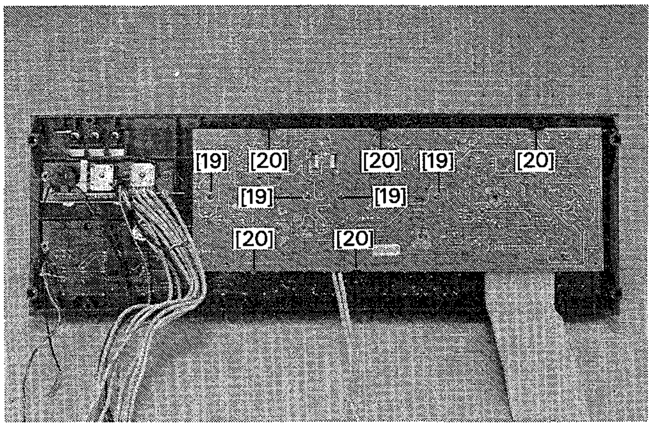


Fig. 8

2.3.2 KEYBOARD 1.777.450.00

- Bedienungseinheit ausbauen (siehe 2.3).
- VU-PEAK BOARD ausbauen (siehe 2.3.1).
- Alle Bedienungsknöpfe an der Frontseite abziehen. Vorsicht: Beim "VOLUME" Knopf zuerst die Madenschraube lösen.
- Bei den Potentiometern INPUT CH1, INPUT CH2 und INPUT CH1CH2 die Befestigungsmuttern lösen.
- 2 Schrauben [21] (Fig.9) lösen.
- Die Schnappklammern sukzessive, von einer Seite beginnend, aus ihren Eingriffstellungen biegen und währenddessen das KEYBOARD mit dosiertem Krafteinsatz nach oben abheben. Das nun freiliegende Massekabel ist lediglich unter das OUTPUT-Potentiometer geklemmt.

Montagehinweis:
- Die Anzahl Unterlagscheiben der Schrauben [21] unbedingt beibehalten. Andernfalls durchdringen die Schrauben das Kunststoffgehäuse.

Achtung:
Die Bedienungstasten sind lose in die Bedienungsfront eingelegt, beim Umdrehen derselben können die Tasten herausfallen.

2.3.3 AUDIO SWITCH BOARD 1.777.462

- Bedienungseinheit ausbauen (siehe 2.3).
- VU-PEAK BOARD ausbauen (siehe 2.3.1).
- KEYBOARD ausbauen (siehe 2.3.2).
- 4 Schrauben [22] lösen, sowie die Anschlusskabel vom Monitorlautsprecher entfernen.

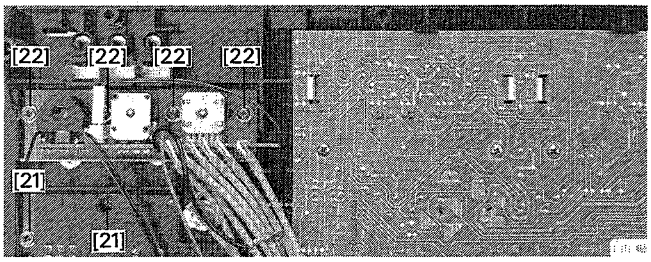


Fig. 9

Montagehinweis:
- Die Anzahl Unterlagscheiben der Schrauben [22] unbedingt beibehalten. Andernfalls durchdringen die Schrauben das Kunststoffgehäuse.

2.3.4 LINE POTMETER OUTPUT 1.777.825.00

- Bedienungseinheit ausbauen (siehe 2.3).
- 8 Schrauben [16] (Fig.7) der Rückwand der Bedienungseinheit lösen, Rückwand entfernen.
- Doppeldrehknopf des OUTPUT CH1CH2 entfernen, Befestigungsmutter lösen.
- Kabel lösen LINE POTMETER OUTPUT herausnehmen.

2.3.5 WIRE HARNESS MONITOR 1.777.820.00

- Bedienungseinheit ausbauen (siehe 2.3).
- VU-PEAK BOARD ausbauen (siehe 2.3.1).
- KEYBOARD ausbauen (siehe 2.3.2).
- Haltebügel [23] des WIRE HARNESS MONITORs aushängen. WIRE HARNESS MONITOR entfernen.

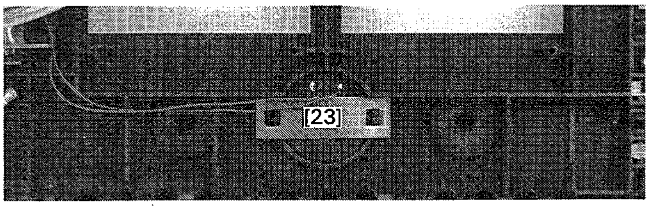


Fig. 10

2.4 ELEKTRISCHE BAUGRUPPEN

2.4.1 CONTROL BOARD 1.777.400.22

- Gehäusekorb entfernen (siehe 2.2.1).
- 9 Schrauben [24] des CONTROL BOARDs lösen.

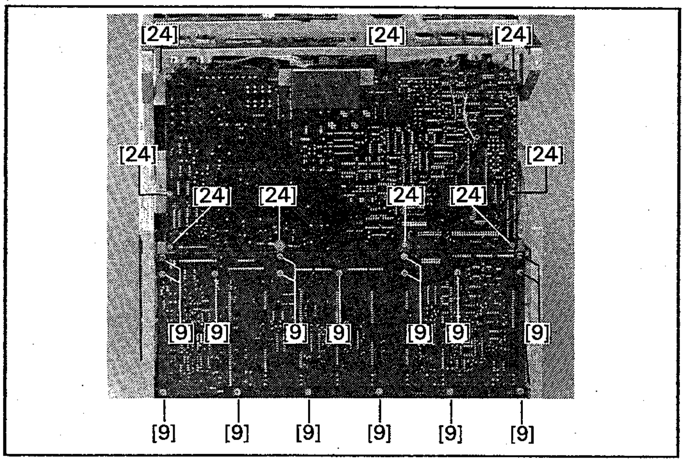


Fig. 11

- CONTROL BOARD abheben und gleichzeitig die insgesamt 19 Steckverbindungen auf dem Board lösen.

Montagehinweis:
- Achten Sie auf die richtige Stellung der Schalter auf dem DIL-Switch (SZ 1).

2.4.2 AUDIO BASIS BOARD 1.777.500.81

- Einschubkarten entfernen (siehe 2.5).
- Gehäusekorb entfernen (siehe 2.2.1).
- 17 Schrauben [9] am AUDIO BASIS BOARD (siehe Fig. 11) lösen.
- Board ausfahren und gleichzeitig die insgesamt 12 Steckverbindungen lösen.

2.4.3 CAPSTAN SERVO BOARD 1.777.410.20

- Gehäusekorb entfernen (siehe 2.2.1).
- CONTROL BOARD entfernen (siehe 2.4.1).
- 4 Schrauben [25] lösen.

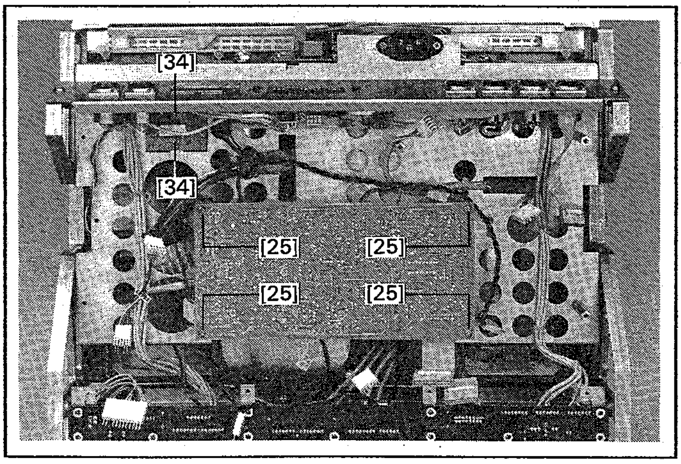


Fig. 12

- Board abheben und gleichzeitig die restlichen 3 Steckverbindungen (Capstanmotor) lösen.

2.4.4 FAST START BOARD 1.777.414.00

- Gehäusekorb entfernen (siehe 2.2.1).
- CONTROL BOARD entfernen (siehe 2.4.1).
- CAPSTAN SERVO BOARD entfernen (siehe 2.4.3).
- Die auf dem CAPSTAN SERVO BOARD befindliche Baugruppe kann durch lösen der Löt- und Kabelverbindungen entfernt werden.

2.4.5 CONNECTION UNIT 1.777.830.00

- Gehäusekorb entfernen (siehe 2.2.1).
- 2 Schrauben [26] lösen.

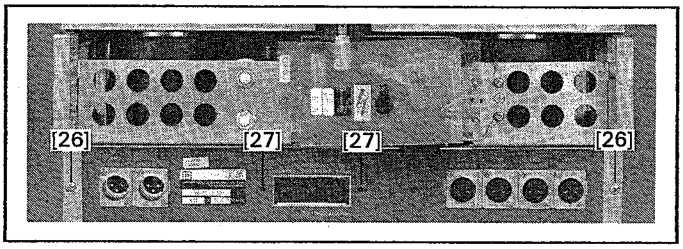


Fig. 13

- 2 Stecker inkl. Kabelbinder auf dem CONTROL BOARD lösen.
- 3 Stecker inkl. Kabelbinder auf dem AUDIO BASIS BOARD lösen.
- CONNECTION UNIT abheben.

2.4.6 CONNECTION BOARD 1.777.441.00

- Gehäusekorb entfernen (siehe 2.2.1).
- CONNECTION UNIT abheben (siehe 2.4.5).
- 2 Stecker inkl. Kabelbinder auf dem CONTROL BOARD lösen.
- Monitorstecker auf dem CONNECTION BOARD ausziehen.
- 2 Schrauben [27] (Fig.13) des CONNECTION BOARDs lösen.
- CONNECTION BOARD entfernen.

2.4.7 MAINS TRANSFORMER 1.777.300.00

- Gehäusekorb entfernen (siehe 2.2.1).
- CONTROL BOARD entfernen (siehe 2.4.1).
- CAPSTAN SERVO BOARD entfernen (siehe 2.4.3)
- CONNECTION UNIT entfernen (siehe 2.4.5).
- Laufwerkabdeckung entfernen (siehe 2.2.2).
- 4 Kreuzschlitzschrauben [28] auf der Laufwerkseite lösen.

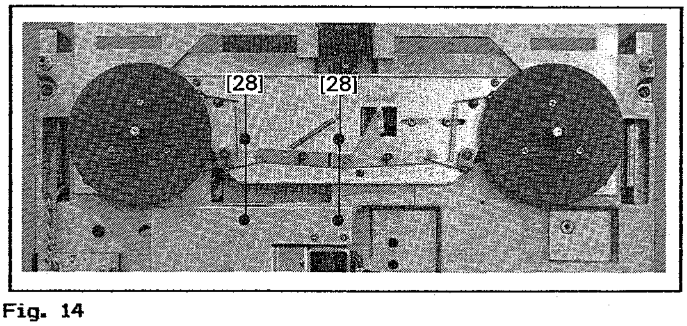


Fig. 14

- Beidseitig 4 Kreuzschlitzschrauben [29,29a] lösen.

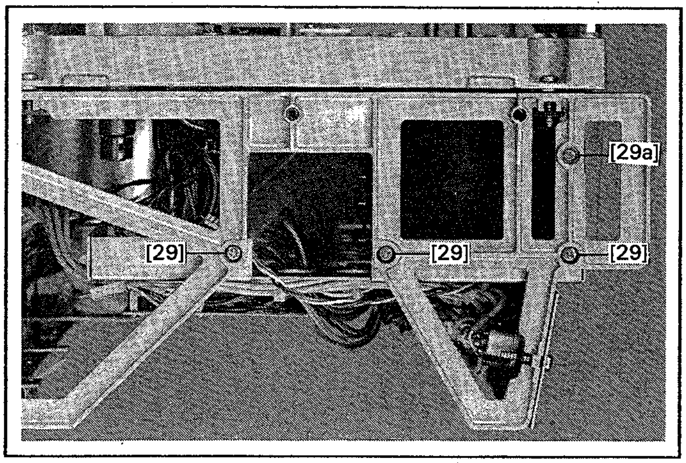


Fig. 15

- Sämtliche Kabelbinder am Chassis-Zwischenteil auftrennen.
- POWER-Schalter leicht anheben und gleichzeitig das Chassis-Zwischenteil entfernen.
- 2 Schrauben [30] der Blechverschalung lösen.
- 3 Schrauben [31] des DISTRIBUTOR BOARDs lösen.

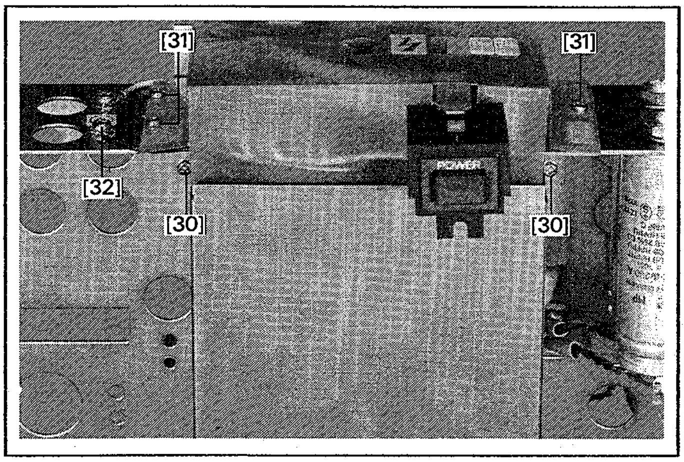


Fig. 16

- Das Netzkabel am Gerätestecker sowie das Massekabel [32] entfernen.
- 8-poligen Kabelstrang freilegen.
- 8 Kabelschuhe am DISTRIBUTOR BOARD ausziehen.

- 4 Schrauben [33] lösen.

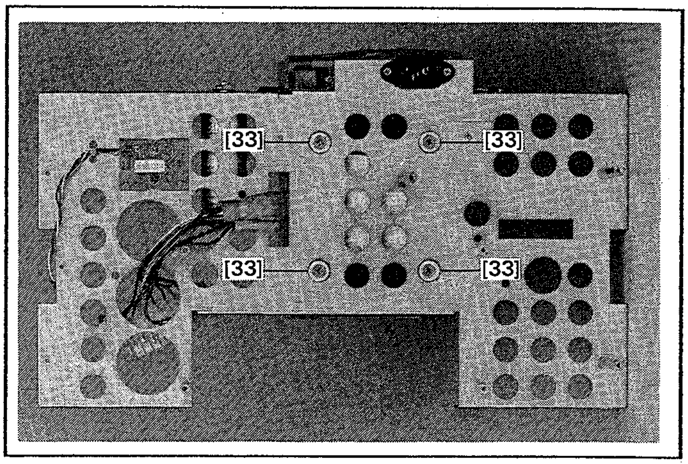


Fig. 17

- Der MAINS TRANSFORMER herausheben.

Montagehinweise:

- Die 2 Schrauben [29a] oben, vorne sind kleiner bemessen als die Schrauben [29].
- Achten Sie bei der Montage des Chassis-Zwischenteils darauf, dass der TACHO BOARD 1.777.250.00 mit dem Impulsgeber am Motor fluchtet.

2.4.8 DISTRIBUTOR BOARD 1.777.320.00

- Gehäusekorb entfernen (siehe 2.2.1).
- Die Befestigung des POWER-Schalters lösen.
- 3 Printbefestigungsschrauben [31] (Fig.16) lösen.
- 8 Kabelstecker DISTRIBUTOR BOARD ausziehen.
- DISTRIBUTOR BOARD entfernen.

2.4.9 TACHO BOARD 1.777.250.00

- Gehäusekorb entfernen (siehe 2.2.1).
- CONTROL BOARD entfernen (2.4.1).
- 2 Kreuzschlitzschrauben [34] (Fig.12) des TACHO BOARDs sowie den Kabelstecker entfernen. Den Board ausfahren.

2.4.10 TENSION ARM BOARD 1.777.211.00

- Laufwerkabdeckung entfernen (siehe 2.2.2).
- 3 Printbefestigungsschrauben [35] (Fig.18) sowie die Kabelstecker lösen, den TENSION ARM BOARD vorsichtig ausfahren.

HINWEIS:

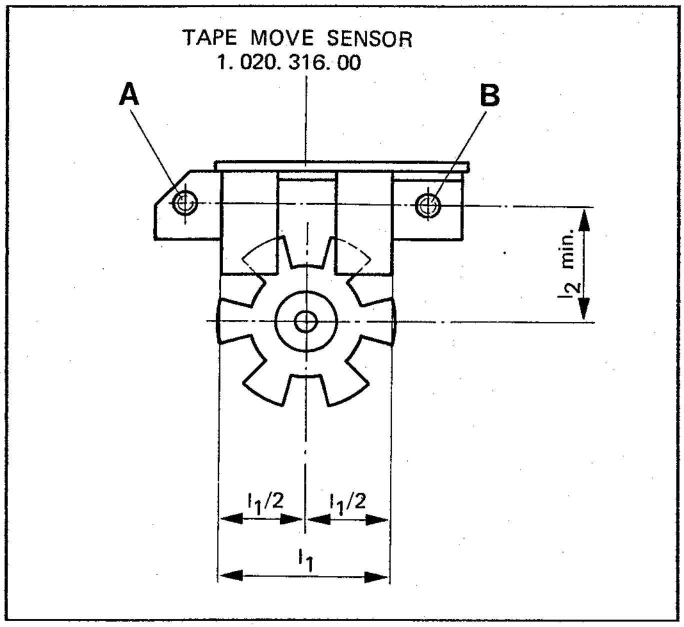
Geräte mit geänderter Bandwaage besitzen einen Federhalter (1.777.210.09), welcher mit zwei Schrauben auf dem Gusschassis befestigt wird. Die Nummern der zwei Federn sind 1.010.134.37 (ersetzt die bestehende Feder) und neu 1.077.100.13.

2.4.11 TAPE MOVE SENSOR PCB 1.020.316.00

- Laufwerkabdeckung entfernen (siehe 2.2.2).
- 1 Schraube [36] sowie 2 Print-/Rollenträgerschrauben [37] des TAPE MOVE SENSORs entfernen.
- 2 Schrauben [38] der Printbefestigung sowie den Kabelstecker lösen.
- Den TAPE MOVE SENSOR ausfahren.

Montagehinweis:

Mit den Kreuzschlitzschrauben A und B den TAPE MOVE SENSOR so montieren, dass die Bedingungen l_2 min. und $l_1/2$ erfüllt sind.



2.4.12 TAPE SENSOR BOARD 1.050.312.00

- Laufwerkabdeckung entfernen (siehe 2.2.2).
- 2 Befestigungsschrauben [39] sowie den Kabelstecker des TAPE SENSOR BOARDs lösen.
- Den TAPE SENSOR BOARD ausfahren.

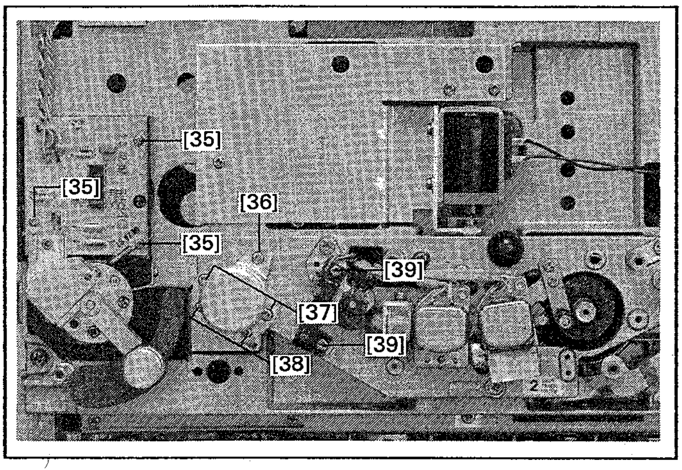
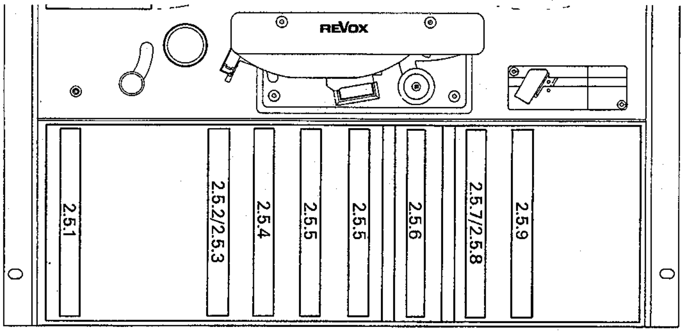


Fig. 18

2.5 EINSCHUBKARTEN

- 4 Schrauben [8] (Fig.3) lösen.
- Bedienungseinheit aufklappen.
  Die Parallelführung ermöglicht durch Hineindrücken gegen das Gerät ein Arretieren der Bedienungseinheit gemäss Fig.3. Damit wird eine optimale Zugänglichkeit für Service- und Reparaturarbeiten an den Einschubkarten gewährleistet.
- Sicherungsschiene lösen.
- Sämtliche Einschubkarten, gemäss untenstehender Liste, können nun einzeln herausgezogen werden.

2.5.1 MIC-LINE-SWITCH BOARD 1.777.520.00(Opt.)
2.5.2 RECORD EQUALIZER BOARD 1.777.540.00
2.5.3 RECORD SPEED BOARDS 1.777.550.00-.559.00
2.5.4 ERASE AMPLIFIER BOARD 1.777.560.00
2.5.5 BIAS AMPLIFIER BOARD 1.777.570.00 (2St.)
2.5.6 PREAMPLIFIER BOARD 1.777.610.00
2.5.7 REPRODUCE EQUALIZER BOARD 1.777.620.00
2.5.8 REPRO SPEED BOARDS 1.777.630.00-.639.00
2.5.9 OUTPUT AMPLIFIER BOARD 1.777.640.00



2.6 MECHANISCHE BAUGRUPPEN

2.6.1 Bremsaggregat

- Laufwerkabdeckung entfernen (siehe 2.2.2).
- Spulenteller lösen, je 3 Schrauben [40].
- An beiden Bremstrommeln die zentrale Schraube [41] (Fig.21) lösen. Durch Druck auf den Bremsmagneten die Bremsbänder lüften und die Bremstrommeln mit Mitnehmerscheiben vorsichtig abheben.

Achtung:

Bremsbänder auf keinen Fall knicken, ebenso dürfen die Bremsflächen nicht berührt werden. Beides hat eine extreme Verschlechterung der Bremsleistung zur Folge.

- 2 Kabelanschlüsse vom Bremsmagnet [42] abziehen.
- 3 Schrauben [43] des Bremsträgers lösen und das Aggregat vorsichtig abheben.

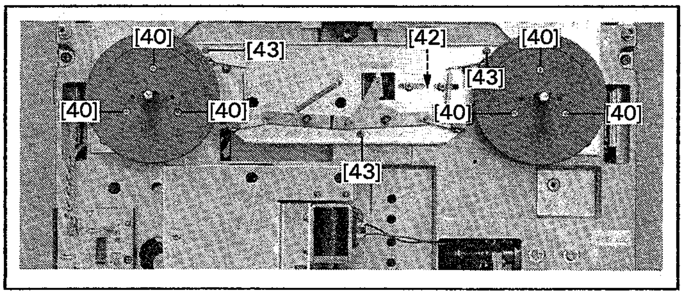


Fig. 19

2.6.2 Kopfträger

- Gehäusekorb entfernen (siehe 2.2.1).
- Laufwerkabdeckung entfernen (siehe 2.2.2).
- Kabelstecker von TAPE MOVE SENSOR PCB , TAPE SENSOR BOARD (Beide Stecker auf CONTROL BOARD) Löschkopf [44], Aufnahmekopf [45] und Wiedergabekopf [46] (alle drei Stecker auf AUDIO BASIS BOARD) entfernen.
- 3 Schrauben [47] auf dem Kopfträger lösen und den Kopfträger abheben, die nun vorstehende Tonwelle [48] ist sehr vorsichtig zu behandeln.

Montagehinweis:

- Beim Zusammenbau die Abschirmung [49] des Wiedergabekopfes [46] nach vorne klappen, und erst dann den Kopfträger aufsetzen.

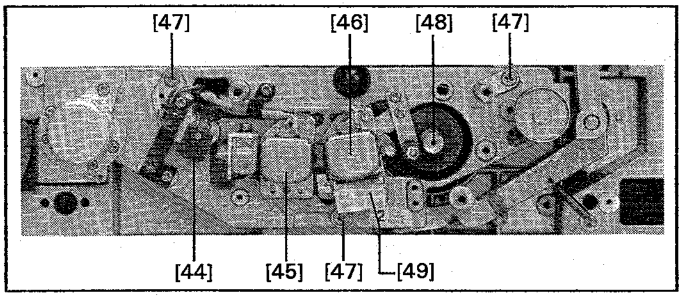


Fig. 20

2.6.3 Tonköpfe

- Kopfträger ausbauen (siehe 2.6.2).
- Die Tonköpfe sind auf das Kopfträgerchassis geschraubt. Bei abgenommenem Kopfträgerchassis können die Tonköpfe mit der Zentrumsschraube gelöst werden.

Hinweis:

Muss der Aufnahme- oder Wiedergabekopf ausgewechselt werden, so ist die Maschine vorzugsweise an die nächste REVOX-Servicestelle einzusenden.

2.6.4 Rechter Wickelmotor

- Bremsaggregat ausbauen (siehe 2.6.1).
- 4 Schrauben [50] der beiden Abgrenzungsbleche entfernen.
- CONTROL BOARD entfernen (siehe 2.4.1).
- CONNECTION UNIT entfernen (siehe 2.4.5).
- Die restlichen 3 Stecker auf dem CAPSTAN SERVO BOARD lösen.
- Sämtliche Kabelbinder am Chassis-Zwischenteil lösen.
- 4 Kreuzschlitzschrauben [28] auf der Laufwerkabdeckung lösen.

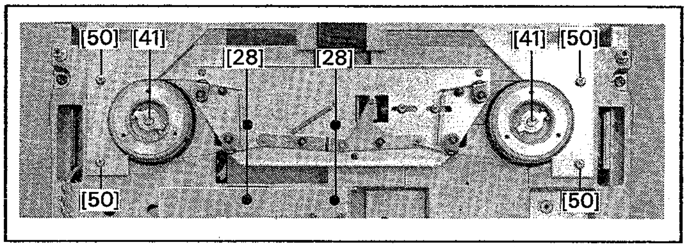


Fig. 21

- Beidseitig 4 Kreuzschlitzschrauben [29,29a] (Fig.15) lösen.
- Den POWER-Schalter leicht anheben und gleicheitig das Chassis-Zwischenteil entfernen.
- 1 Schraube der Motorkabel-Halterung [51] (Fig.24) lösen.
- 3 Schrauben der Wickelmotorflanschung [52] lösen, gleichzeitig den Wickelmotor mit einer Hand sichern und ausfahren.

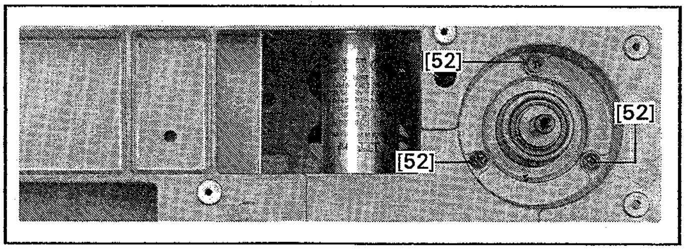


Fig. 22

Montagehinweise:

- Achten Sie bei der Montage des Chassis-Zwischenteils darauf, dass der TACHO BOARD 1.777.250.00 mit dem Tachorad am Motor fluchtet.
- Die 2 Schrauben [29a] oben vorne sind kleiner bemessen als die Schrauben [29].

2.6.5 Linker Wickelmotor

- Die Demontage ist sinngemäss identisch mit der Arbeit für den Ausbau des rechten Wickelmotors, deshalb siehe 2.6.4.

2.6.6 Wickelmotorenlager

- Wickelmtoren ausbauen (siehe 2.6.4).
- Segerring (B) geschliffen und Segerring (C) mit Segerringzange entfernen. Der Rotor samt Welle nach unten ausfahren.

Montagehinweise:

- Die Höhenjustierung der Bremsrolle (Spulenteller) erfolgt mit den Distanzscheiben (D).
- Es ist darauf zu achten, dass die Distanzscheiben (D) wieder auf die gleiche Wickelmotorenachse aufgelegt werden.
- Der entfernte Segerring (B) soll ersetzt werden.
- Die Kugellager der Wickelmotoren dürfen nur gegen Originalteile ausgewechselt werden.

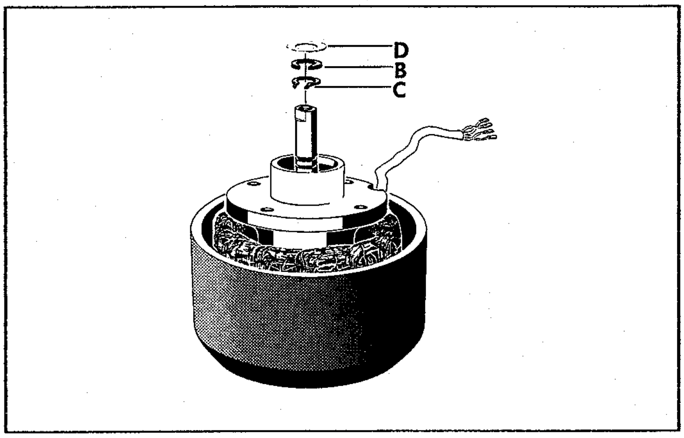


Fig. 23

2.6.7 Tonmotor

- Gehäusekorb entfernen (siehe 2.2.1).
- Laufwerkabdeckung entfernen (siehe 2.2.2).
- Kopfträger ausbauen (siehe 2.6.2).
- CONTROL BOARD entfernen (siehe 2.4.1).
- 3 Schrauben der Tonmotorflanschung [53] (Fig.25) lösen, gleichzeitig den Tonmotor mit einer Hand sichern und ausfahren.

2.6.8 Andruckmagnet, Andruckarm

- Gehäusekorb entfernen (siehe 2.2.1).
- Laufwerkabdeckung entfernen (siehe 2.2.2).
- 3 Schrauben [47] (Fig.20) des Kopfträgers lösen.
- Kabel [54] des Andruckmagnetes freilegen.
- 2 Sechskantschrauben [55] (Fig.24) der Andruck-Relaisbefestigung lösen und das Relais ausfahren.
- Die Madenschraube [56] an der Andruckarmwelle lösen.

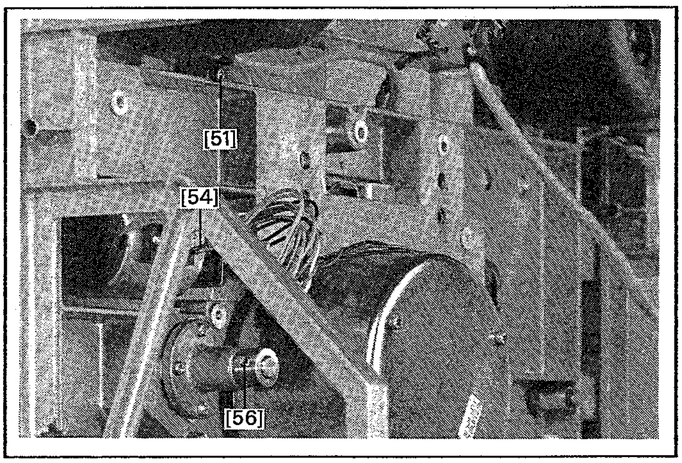


Fig. 24

- Den Andruckarm ausfahren.

Montagehinweis:

- Das Axialspiel der Welle soll 0.4-1.0mm betragen.

2.6.9 Bandabhebe-Einheit

- Gehäusekorb entfernen (siehe 2.2.1).
- Laufwerkabdeckung entfernen (siehe 2.2.2).
- Kopfträger ausbauen (siehe 2.6.2)
- 3 Schrauben [57] der Bandabhebe-Einheit lösen.
- 3 Schrauben [58] der Magnetbefestigung inkl. dem Verbindungskabel [59] zum Magnet lösen. Nun kann die ganze Bandabhebe-Einheit ausgefahren werden.

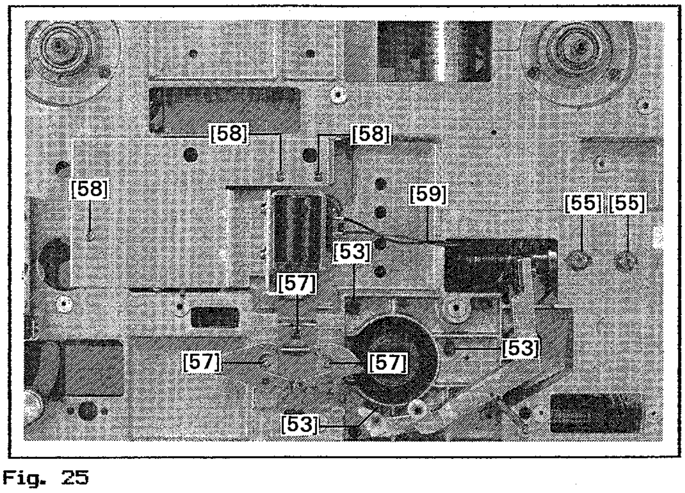


Fig. 25

3. FUNKTIONSBESCHREIBUNG

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3.1 UEBERSICHT

Funktionell kann die Tonbandmaschine C270 in einen Laufwerk- und einen Audioblock unterteilt werden.

Der Laufwerkblock enthält folgende Funktionsgruppen:
- Speisung
- Mikroprozessor
- Mikroprozessor Interface
- Sensoren
- Capstan-, Wickelmotorenregelung und Steuerung
- Keyboard und Schnittstellen nach aussen.

Der Audioblock enthält folgende Funktionsgruppen:
- Mikrofonverstärker (Option)
- Line-Eingangsverstärker
- Aufnahmeverstärker
- Lösch- und Vormagnetisierungsverstärker
- Vor- und Syncverstärker
- Wiedergabe- und Ausgangsverstärker
- VU-Meter und PEAK-Anzeige

3.2 FUNKTIONSBESCHREIBUNG LAUFWERK

3.2.1 DISTRIBUTOR BOARD 1.777.320.00

Die Netzeingangsbuchse ist direkt mit dem DISTRIBUTOR BOARD verbunden. Die Eingangsspannung gelangt über den einpoligen Schalter (S1), der primären Sicherung (F1) sowie dem Bandpassfilter (L1,C1,C2) zum Spannungswähler (S2).
Der Ausgang des Spannungswählers führt via AMP-Stecker und Litzen zur Primärseite des Netztransformators.

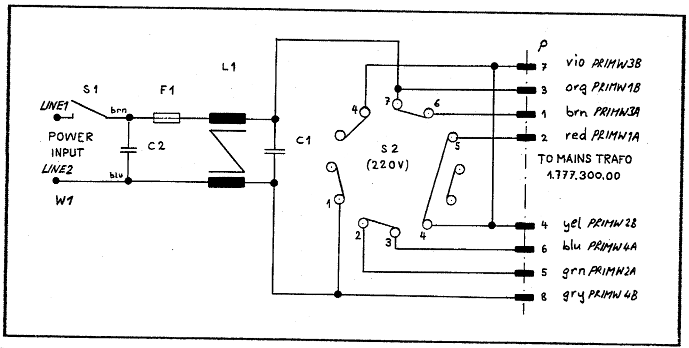

Fig. 1

3.2.2 CONTROL BOARD 1.777.400.22

Speisung

Der Sekundärteil des Netztransformators ist mittels Litzen und Steckerleiste (J15) mit dem CONTROL BOARD verbunden. Er liefert die Eingangsspannung folgender Speisungen:

- +15V DC mit Gleichrichter (DZ3) und Spannungsregler (IC 23), für Audio und Steuerung
- -15V DC mit Gleichrichter (DZ4) und Spannungsregler (IC24) für Audio und Steuerung
- +36V DC mit Gleichrichter (DZ6), unstabilisiert für den Capstanmotor
- +24V DC mit Gleichrichter (DZ5), unstabilisiert für die Magnete, den Monitor Ausgang und die serielle Schnittstelle RS 232.
- +5V DC mit Schaltnetzteil (IC25) aus dem +24V DC generiert wird für die Logik und die Instrumentenbeleuchtung.
- ≈125V AC für die Wickelmotoren

Alle Speisespannungen sind sekundärseitig mit Schmelzsicherungen gesichert.

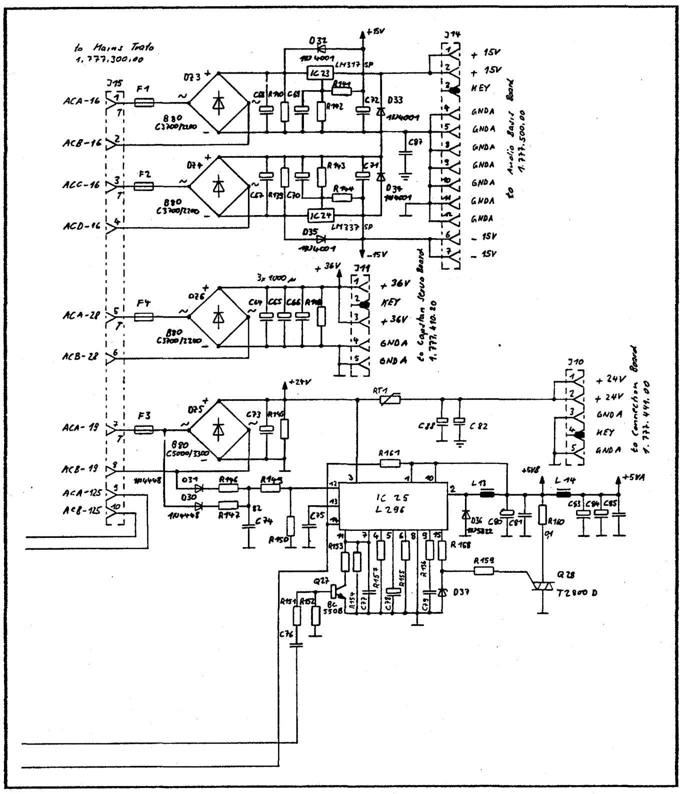

Fig. 2

Prozessorsystem

Das Prozessorsystem besteht aus dem OPROM-Prozessor 637A01Y (IC6) mit internem 16k EPROM und 192 Byte RAM. Der Prozessorclock beträgt 1,2288 MHz. Von diesem werden durch Teilen in (IC7) folgende Frequenzen gewonnen:

- 153,6 kHz als Lösch- und Vormagnetisierungsfrequenz.
- 76,8 kHz für das +5V Schaltnetzteil und die Pulsbreitenmodulation der Wickelmotorensteuerung.
- 38,4 kHz für die Pulsbreitenmodulation der Captanmotorregelung und der Modulationsfrequenz für den Bandsensor.
- 9600 Hz als Capstan-Tachoreferenz.

Betriebsparameter

Folgende Betriebsparameter können via 8 Bit-DIP-Switch (SZ1) programmiert werden:

S2 ON = Auto-Rewind aktiv, mit Loop-Taste programmierbar, Loop-Funktion nicht aktiv
S2 OFF = Normale Loop-Funktion

S3 ON = Schonwickel aktiv, mit Potmeter (RA4) einstellbar
S3 OFF = kein Schonwickel

S4 ON/S5 ON = 9.5 cm/s bzw. 19 cm/s Bandgeschwindigkeit

S4 ON/S5 OFF = 9.5 cm/s bzw. 38 cm/s Bandgeschwindigkeit

S4 OFF/S5 ON = 19 cm/s bzw. 38 cm/s Bandgeschwindigkeit

S4 OFF/S5 OFF= 9.5 cm/s bzw. 19 cm/s Bandgeschwindigkeit

S6 ON = Mic-Option vorhanden
S6 OFF = Mic-Option nicht vorhanden

S7 ON = Standard Maschine
S7 OFF = Nur Wiedergabe Maschine

S1 ON/S8 ON = Maschine im Standardbetrieb
S1 ON/S8OFF = Fader aktiv

S1 OFF/S8ON = ext. Sync aktiv

Schnittstellen

Zur Ermöglichung der Datenkommunikation besitzt der CONTROL BOARD folgende Schnittstellen:

- **Die RS 232 (Serieller Ein- und Ausgang) wird mit einer Baud-Rate von 9600 betrieben.**
  Signalpfad Eingang (RCV): Transistor (Q5), Stecker (P2), Flachbandkabel, CONNECTION BOARD.
  Signalpfad Ausgang (SND): IC 1, Stecker (P2), Flachbandkabel, CONNECTION BOARD.
- **Faderstart Eingang**
  Signalpfad (FADER): Optokoppler (DLQ1), Stecker (P2), Flachbandkabel, CONNECTION BOARD.
- **Tacho Eingang**
  Signalpfad (TACHO): Steckerbuchse (J4), Litzenkabel, TACHO BOARD.
- **Zählerrolle Eingang**
  Signalpfad (MOVE C): Steckerbuchse (J12), Litzenkabel, TAPE MOVE SENSOR.
- **Band Sensor Eingang**
  Signalpfad: Steckerbuchse (J5), Litzenkabel, TAPE SENSOR BOARD.
- **Fühlhebel Sensor Ein- und Ausgang**
  Signalpfad (ATENS): Steckerbuchse (J13), Litzenkabel, TENSION ARM BOARD.
- **Ein- und Ausgang zum Frontbedienungsteil**
  Signalpfad (KBD): Stecker (P4), Flachbandkabel, VU-PEAK BOARD, KEYBOARD.
- **Steuerausgang zum Audio Block**
  Signalpfad: Stecker (P1), Flachbandkabel, AUDIO BASIS BOARD.
- **Steuerausgang zur Capstanmotor-Steuerung**
  Signalpfad (S CAP): Stecker (P3), Flachbandkabel, CAPSTAN SERVO BOARD.

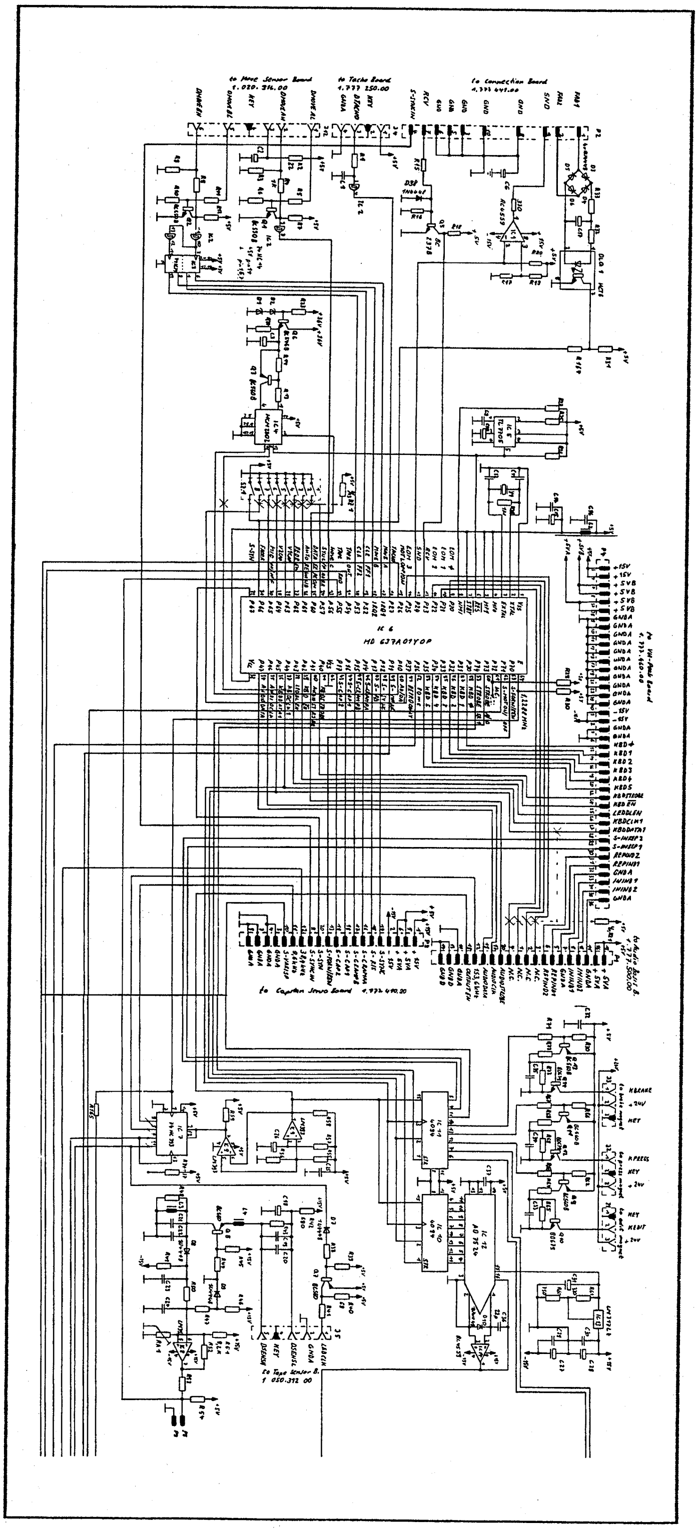

Fig. 3

Brems- Andruck- und Editiermagnetansteuerung:

Der Ansteuerbefehl für die Magnete erfolgt über den Seriellen Bus vom Prozessor (IC 6) zum Schieberegister (IC 11) der die Treiber (Q9/Q10, Q11/Q12, Q13/Q14) ansteuert. Die Verbindung zu den Magneten wird mit Litzen an den Buchsensteckern (J1, J2 und J3) gewährleistet.

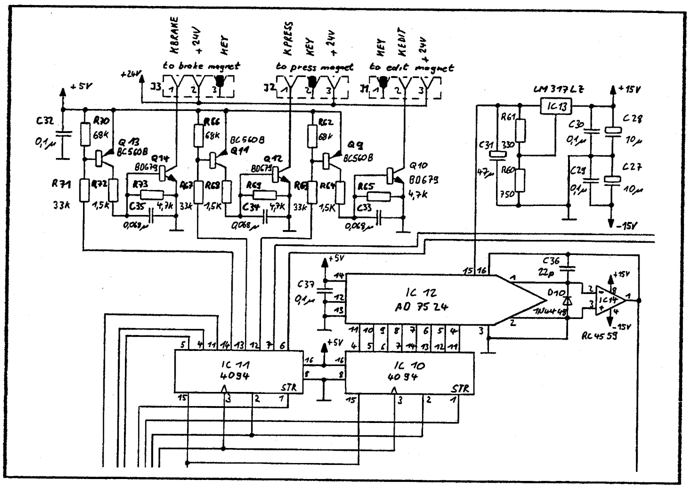

Fig. 4

Wickelmotorenansteuerung:

Die Wickelmotoren werden je nach Betriebsart unterschiedlich angesteuert. Der Prozessor bestimmt die jeweils erforderliche Variante und aktiviert sie über den Umschalter (IC16).

- Im "PLAY" Betrieb berechnet der Prozessor aus Bandgeschwindigkeit und Drehzahl des rechten Wickels den richtigen Bandzug.
  Signalpfad: Prozessor IC6 (Fig.3), serieller Bus (KBDDATA1), Schieberegister IC10 (Fig.3), D/A-Wandler IC12 (Fig.3).
- Im "Umspul"-Betrieb wird jeweils der geschleppte Motor mit dem Bandwaage-Signal (ATENS/J13) geregelt.

Die Wickelmotoren, zwei Phasenschieber-Asynchronmotoren, werden mit Netzfrequenz (125 VAC) betrieben. Die Steuerung der Spannungsamplitude erfolgt durch Pulsbreitenmodulation mit 76 kHz. Die Regelverstärker werden durch den IC 19 gebildet, die Pulsbreitenmodulatoren durch IC 15 und Q19/Q20 für den Sägezahn und IC 20 für die Modulatoren.

Die Motorenendstufe wird durch folgende Bauteile definiert: Vorstufe (IC21 und IC22), Entkopplungstransformatoren (T1 und T2), Gleichrichter (DZ1 und DZ2), Schalter (Q25 und Q26). Die Transistoren (Q21 bis Q24) und die Dioden (D26 bis D29) dienen der Kommutationssteuerung.

Die Phasenschieber-Kondensatoren werden über die Litzen mit den CIS-Buchsen (J7) und (J9) verbunden. Ebenso die beiden Motoren über die CIS-Buchsen (J6) und (J8).

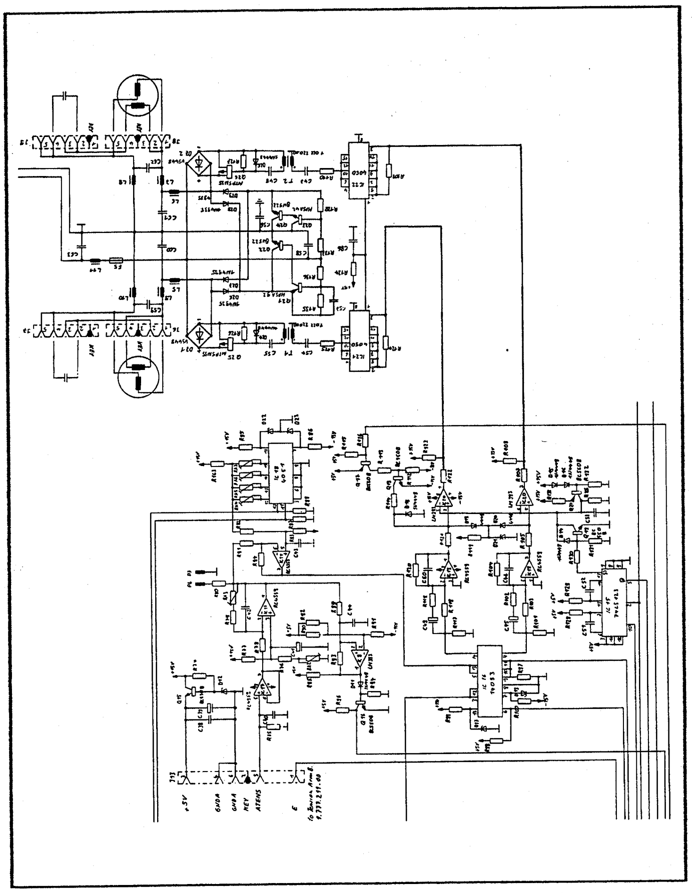

Fig. 5

3.2.3 TENSION ARM BOARD 1.777.211.00

Das vom CONTROL BOARD stammende 1,2288 MHz Rechtecksignal wird in IC 1 verstärkt und dem Parallelschwingkreis (L1, C3, C4) eingespeist. Je nach Winkelposition des Fühlhebels ändert sich die Schwingkreisspannung. Diese wird gleichgerichtet, gesiebt und über P5 (ATENS) der Bereichsanpassungsschaltung IC 17 (Fig. 5) auf dem CONTROL BOARD eingespeist. Diese Bereichsanpassungsschaltung gleicht die mechanischen Toleranzen mit Hilfe der einstellbaren Potentiometer (RA2, RA3) aus.
Das so gewonnene Regelsignal wird der Bandzugeinstellschaltung zugeführt IC 14, IC 18 (Fig. 5).
Nun können folgende Bandzüge eingestelllt werden:

- (Pot. RA4) für Bandzug im Edit
- (Pot. RA5) für Bandzug im Play
- (Pot. RA6) für Bandzug im Rewind «
- (Pot. RA7) für Bandzug im Forwind »

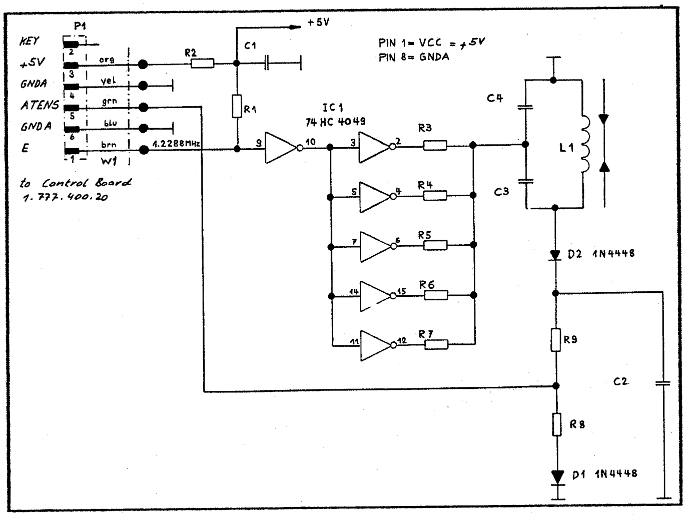
P1
KEY
+5V
GNDA
ATENS
GNDA
E
org
yel
grn
blu
brn
W1
1.2288MHz
to Control Board 1.777.400.20
+5V
R2
C1
R1
IC1 74HC4049
PIN 1= VCC = +5V
PIN 8= GNDA
R3
R4
R5
R6
R7
C4
L1
C3
D2 1N4448
R9
C2
R8
D1 1N4448

Fig. 6

3.2.4 TAPE MOVE SENSOR 1.020.316.00

Die Zählerrolle, die eine Fünferteilung aufweist, wird durch zwei Optokoppler (DLQ1, DLQ2) abgetastet. Die abgetasteten Signale werden über den Stecker (J12) der Auswertschaltung auf dem CONTROL BOARD (Fig. 3) zugeführt. Mit Hilfe dieser Auswertschaltung (IC2, IC3 und Q1, Q2) kann der Prozessor die Geschwindigkeit und Drehrichtung des Bandes feststellen.

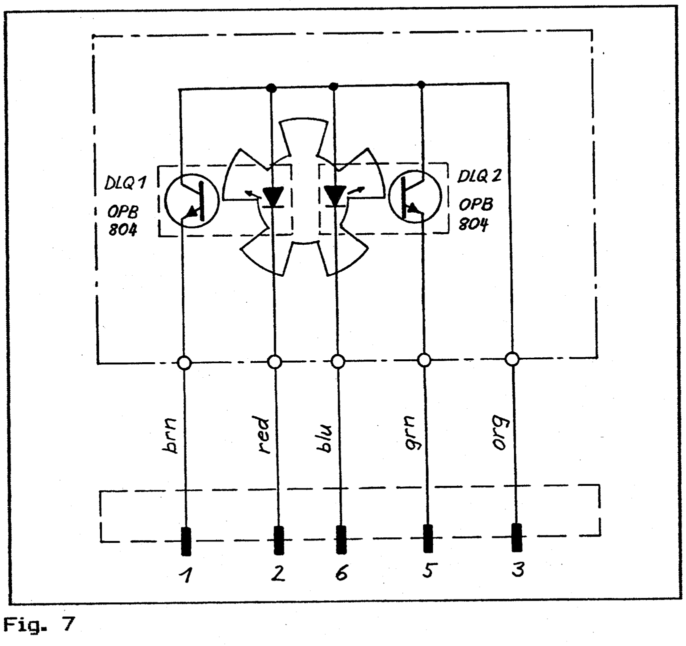
DLQ1
OPB 804
DLQ2
OPB 804
brn
red
blu
grn
org
1
2
6
5
3

Fig. 7

3.2.5 TAPE SENSOR BOARD 1.050.312.00

Auf dem TAPE SENSOR BOARD befindet sich eine IR-Sendediode (DL1), die mit 38,4 kHz moduliert wird, sowie einen IR Empfangstransistor (QL1), der je nach Bandsorte, Normal- oder Markierband, einen Strom dem Parallelschwingkreis (L4, C19, C20) auf dem CONTROL BOARD (Fig. 3) liefert. Das gefilterte Signal wird, nachdem es gleichgerichtet ist, dem Komparator (IC 8) zugeführt. Das ausgewertete Signal wird dem Prozessor (IC6, Pin 22) weitergegeben. Mit dem

Potentiometer (RA1) kann die Schaltschwelle eingestellt werden.

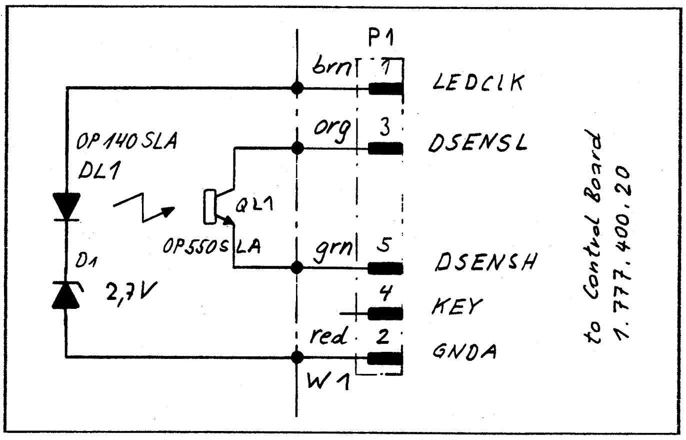
P1
brn
1
LEDCLK
org
3
DSENSL
OP140SLA
DL1
QL1
OP550SLA
grn
5
DSENSH
D1
2,7V
4
KEY
red
2
GNDA
W1
to Control Board
1.777.400.20

Fig. 8

3.2.6 TACHO BOARD 1.777.250.00

Der TACHO BOARD tastet das Tachorad, 64 Zähne, des rechten Wickelmotors ab (DLQ1, Q1). Das gewonnene Signal (DTACHO) wird auf dem CONTROL BOARD aufbereitet (Schmitt-Trigger, IC2) und dem Prozessor zugeführt. Daraus erkennt der Prozessor die Drehgeschwindigkeit des Wickelmotors.

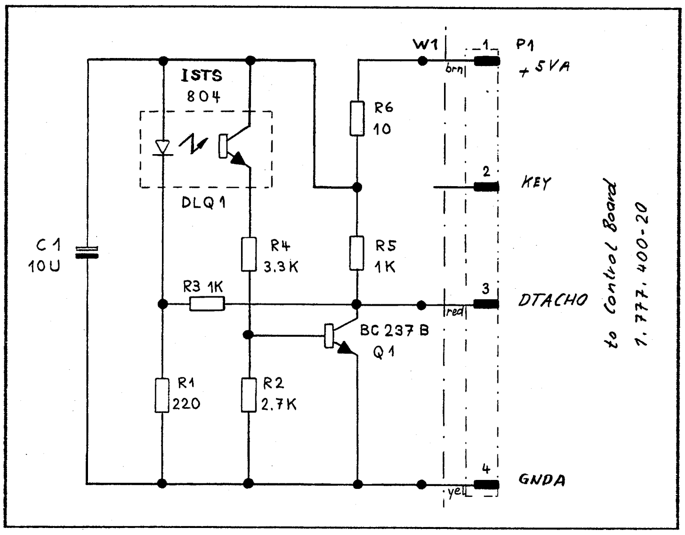
W1
1
P1
brn
+5VA
ISTS
804
DLQ1
R6
10
2
KEY
C1
10U
R4
3.3K
R5
1K
R3 1K
3
red
DTACHO
BC 237 B
Q1
R1
220
R2
2.7K
4
yel
GNDA
to Control Board
1.777.400-20

Fig. 9

3.2.7 CAPSTAN SERVO BOARD 1.777.410.20

Die Capstan-Servo Schaltung hat die Aufgabe die Capstanmotor-Drehzahl konstant zu halten, was auch eine konstante und wobbelarme Bandgeschwindigkeit ergibt. Von der CONTROL BOARD Baugruppe sind folgende Anschlüsse vorhanden:

- Speisung +36V DC am Stecker
- Speisung +/- 15V DC und +5V DC, Referenz Taktsignal 9,6 kHz TTL, externes Referenz-Taktsignal (S-SYNCIN), zwei Bit Befehlssignale für die Frequenz-Referenz Umschaltung (S-VARISPD, S-SYNC) und zwei Bit Befehlssignale für die Bandgeschwindigkeits-Umschaltung (S-CAP1, S-CAP2), alle an dem Flachbandkabel (W1).

Die Sollreferenz ist 9,6 kHz, sie kann intern von dem Prozessor Quarz abgeleitet, von dem Varispeed Oszillator (IC1, IC3) oder durch eine externe Referenz zur Verfügung gestellt erden. Die dem jeweiligen Betriebsmodus des C270 entsprechende Umschaltung geschieht in IC5.
Dieses Signal wird im IC6 durch 16 geteilt und über einen Frequenz-Spannungumsetzer dem Summator (IC2, IC12) zugeführt .

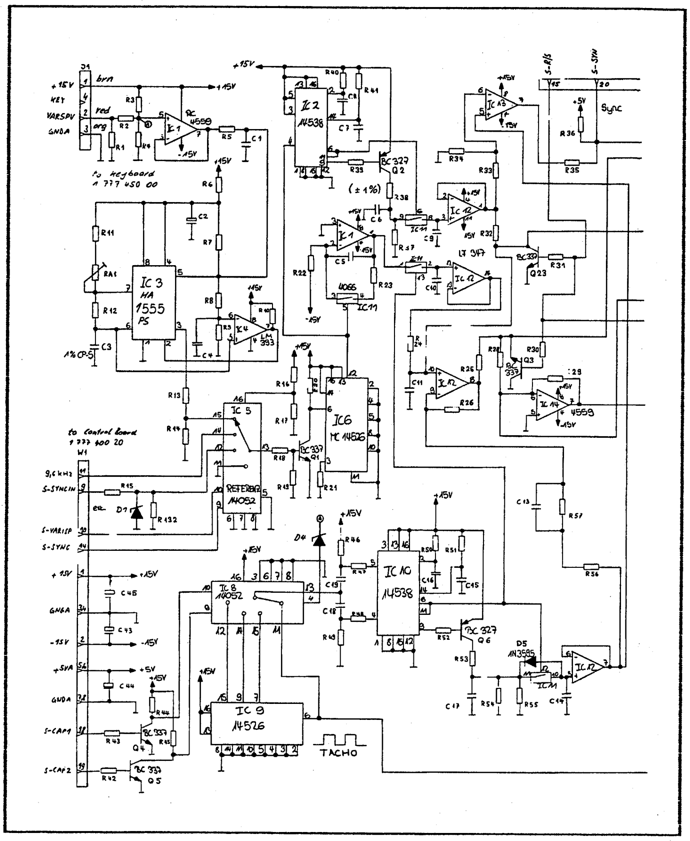
IC1
IC2
14538
IC3
NA 1555
IC4
IC5
IC6
MC14526
IC8
14052
IC9
14526
IC10
14538
REFERENZ
14052
TACHO
to keyboard
to Control Board
Sync
+15V
-15V
+5VA
GNDA
S-CAP1
S-CAP2
S-SYNCIN
S-VARISP
S-SYNC
9,6kHz
Q1
Q2
Q3
Q4
Q5
Q6
Q23
BC337
BC327
LT 347
4558
D1
D4
D5
RA1

Fig. 10

Das Tachosignal (ATACHOA) des Capstanmotors wird zuerst FM-demoduliert (IC17, IC18, IC19, Q22) und, je nach gewählter Bandgeschwindigkeit (IC8, IC9, Q4, Q5), einem Frequenz-Spannungsumsetzer (IC10, IC12) zugeführt. Die so gewonnene Spannung wird auch dem oben erwähnten Summator (IC2, IC12) zugeführt aber mit inverser Polarität.
Parallel zu diesen Kreisen besteht eine PLL-Schaltung, welche die ankommende Tacho Signalphase mit der Referenzphase vergleicht und ebenfalls den Summator-Eingang speist (IC1, IC11, IC12). Das so gewonnene Summatorsignal wird, verstärkt, dem Pulsbreitenmodulator zugeführt. Der Pulsbreitenmodulator steuert den DC-DC Wandler der für die Motoren-Inverterstufe die richtige Speisespannung liefert (IC13, IC14, Q7, Q9).

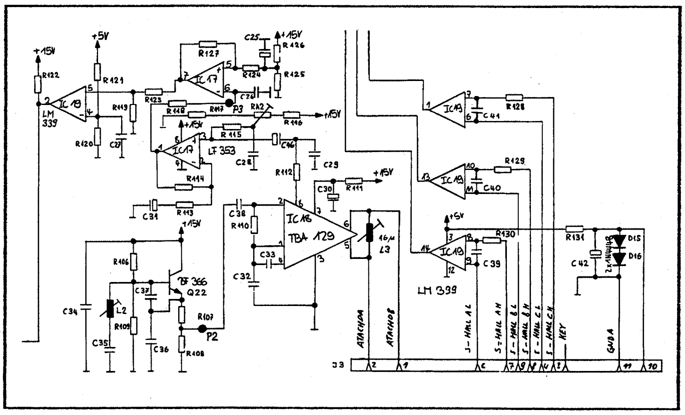
IC 19
LM 339
IC 17
LF 353
IC 16
TBA 129
BF 366
Q22
L2
L3
P2
P3
J3
ATACHOM
ATACHOS
J-HALL AL
S-HALL AH
S-HALL BL
S-HALL BH
S-HALL CL
S-HALL CH
KEY
GNDA

Fig. 11

Die Motoren-Inverterstufe besteht aus:

- Hall-Element, dies meldet die Position des Rotors (IC 19, Fig. 11), via Steckerbuchse (J3).
- Logische Steuerung, diese entscheidet welche Schalter geöffnet respektive geschlossen sein müssen (IC16, Q13 bis Q21). Die Schaltertransistoren leiten den Strom auf dem richtigen Weg durch die Wicklungen, Steckerbuchse (J2). Potentiometer RA1 stellt den Vari-Speed-Bereich und Potentiometer RA2 die Tachosymmetrie ein.

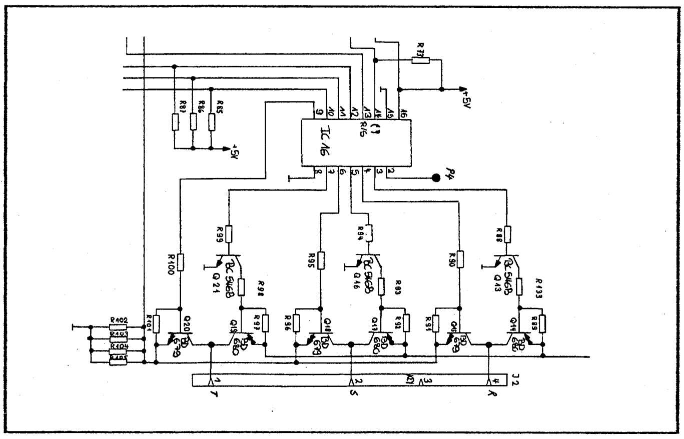
IC 16
+5V
P4
Q21
Q16
Q13
Q20
Q18
Q19
Q17
Q15
Q14
J2

Fig. 12

3.2.8 CONNECTION BOARD 1.777.441.00

Auf dem CONNECTION BOARD befinden sich folgende Schnittstellen:

- 7 pol. DIN (J2) RS 232 serielle Schnittstelle
- 8 pol. DIN (J1) Monitor Ausgang
- 8 pol. DIN (J5) Fader oder Sync, mit Schalter S11 bis S14 einstellbar:
  - S11/S12 OFF und S13/S14 ON: Sync aktiv
  - S11/S12 ON und S13/S14 OFF: Fader Start aktiv
  - Free Head Anschluss

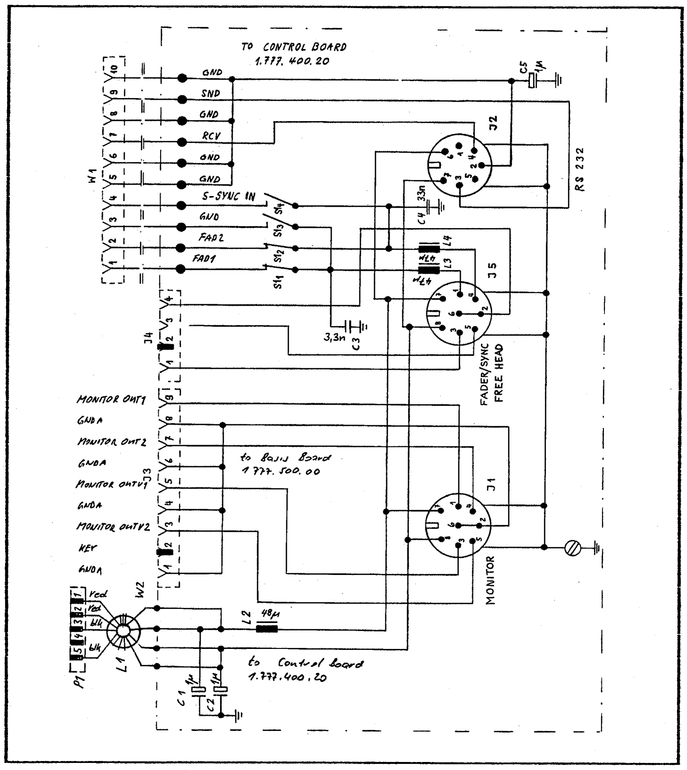
TO CONTROL BOARD 1.777.400.20
GND
SND
GND
RCV
GND
GND
S-SYNC IN
GND
FAD2
FAD1
W1
C5 1µ
J2
RS 232
C4 33n
L4
L3
J5
C3 3,3n
J4
FADER/SYNC FREE HEAD
MONITOR OUT1
GNDA
MONITOR OUT2
GNDA
MONITOR OUT V1
GNDA
MONITOR OUT V2
KEY
GNDA
J3
to Basis Board 1.777.500.00
J1
MONITOR
W2
L2 48µ
L1
P1
to Control Board 1.777.400.20
C1 1µ
C2 1µ
S11
S12
S13
S14

Fig. 13

3.2.9 KEYBOARD 1.777.450.00

Die Keyboard Baugruppe beinhaltet die 7-Segment-Anzeige und die Tastaturabfrage mit Quittierung.
Die 7-Segment Driver (IC10, IC11) werden durch einen seriellen Bus (KBDATA1) angesteuert. Die Driver steuern die 6 LED 7-Segment Anzeigen an (IC 14 bis IC 19, Q7 bis Q12). Eine 6x6 Matrix Schaltung bildet die Tastaturabfrage die einerseits mittels seriellem Bus (Q13 bis Q18) und Schieberegister (IC 12) sowie mit einem parallelen Bus mit dem Prozessor auf dem CONTROL BOARD kommuniziert.
Für die LED-Anzeige steht das durch den seriellen Bus (KBDATA1) gesteuerte Schieberegister (IC 13) zur Verfügung.

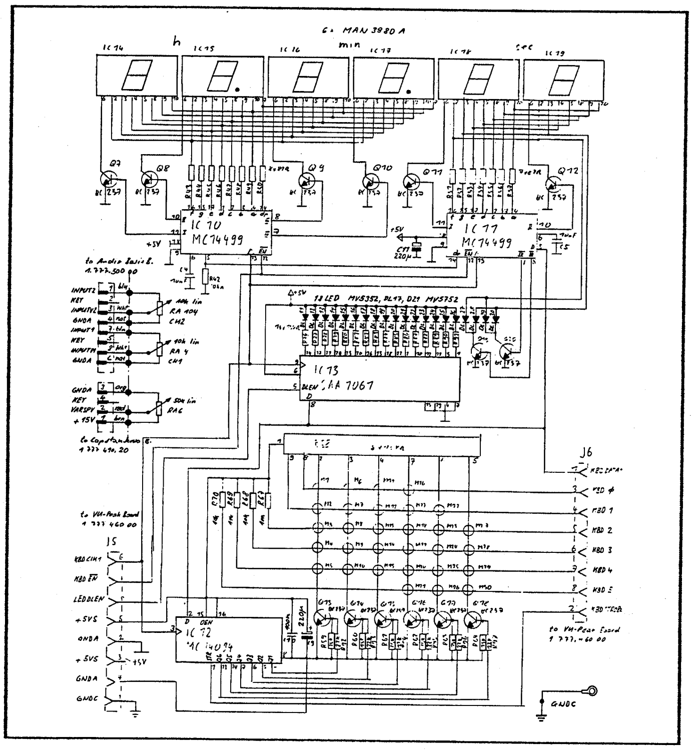
6 x MAN 3980 A
h
min
sec
IC 14
IC 15
IC 16
IC 17
IC 18
IC 19
Q7
Q8
Q9
Q10
Q11
Q12
BC 237
IC 10
MC14499
IC 11
MC14499
+5V
C11
220µ
C4
10nF
R42
to Audio Basis B.
1.777.500.00
INPUT2
KEY
INPUTV2
GNDA
INPUT1
KEY
INPUTV1
GNDA
10k lin
RA 104
CH2
10k lin
RA 4
CH1
GNDA
KEY
VARSPY
+15V
50k lin
RAC
to Capstanknob
1 777 490.20
18 LED MV5352, DL17, DZ1 MV5752
IC 13
SAA 1067
DLEN
R70
R69
R68
R67
to VU-Peak Board
1 777 460 00
J5
KBD CLK1
KBD EN
LEDDLEN
+5VS
GNDA
+5VS
+15V
GNDA
GNDC
IC 12
4094
D
OEN
STR
100n
220µ
Q13
Q14
Q15
Q16
Q17
Q18
BC 237
R59
R60
R61
R62
R63
R64
J6
KBD DATA1
KBD 0
KBD 1
KBD 2
KBD 3
KBD 4
KBD 5
KBD STROBE
to VU-Peak Board
1 777.460 00
GNDC

Fig. 14

3.3 FUNKTIONSBESCHREIBUNG AUDIO

3.3.1 AUDIO BASIS BOARD 1.777.500.81

Der AUDIO BASIS BOARD enthält folgende Verbindungen:

- +/- 15V Speisungsanschluss mit Litzen (P1) vom CONTROL BOARD.
- + 5V und digitaler Steuereingang vom CONTROL BOARD.
- Line 1 und 2 Eingang mit Kabel (J15) vom Anschlussfeld.
- Mic 1 und 2 Eingang mit Kabel (J14) vom Anschlussfeld.
- Uncal Input 1 und 2 Potentiometer Eingang mit Kabel vom KEYBOARD im Bedienungsteil.
- Uncal Output 1 und 2 Potentiometer Eingang mit Kabel vom Bedienungsteil.
- Line 1 und 2 und Monitorausgang mit Kabel, zum Anschlussfeld und CONNECTION BOARD.
- Phones-Ausgang mit Kabel zum Switch Board im Bedienungsteil.
- Löschausgang 1 und 2 mit Litzen zum Kopfträger.
- Aufnahmeausgang 1 und 2 mit Kabel zum Kopfträger.
- Wiedergabeeingang 1 und 2 mit Kabel zum Kopfträger.
- Steckerbuchsen-Anschlüsse zu den Audio-Steckkarten, siehe folgender Text.

Der serielle Audio-Bus, der den Prozessor mit der Audio-Elektronik verbindet, steuert drei in Serie geschaltete Schieberegister (IC1/IC2/IC3). Die Ausgänge dieser Bausteine, je nach Aufgabe mit dementsprechenden Audio-Einschüben verbunden, steuern die notwendigen Ablauffunktionen.

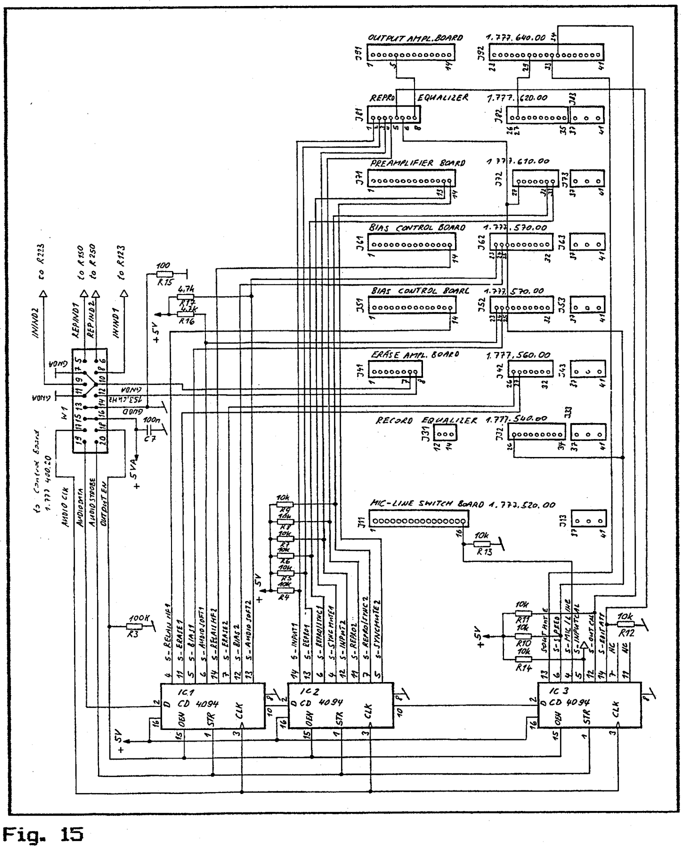
OUTPUT AMPL. BOARD 1.777.640.00
REPRO EQUALIZER 1.777.620.00
PREAMPLIFIER BOARD 1.777.610.00
BIAS CONTROL BOARD 1.777.570.00
BIAS CONTROL BOARD 1.777.570.00
ERASE AMPL. BOARD 1.777.560.00
RECORD EQUALIZER 1.777.540.00
MIC-LINE SWITCH BOARD 1.777.520.00
IC1 CD 4094
IC2 CD 4094
IC3 CD 4094
W1
to Control Board 1.777.460.20

Fig. 15

Die symmetrischen Eingangsverstärker (T101/IC101 Kanal 1, T201/IC201 Kanal 2) speisen die Eingangs-Cal-Uncal-Verstärker (IC102/IC103 Kanal 1 IC202/IC203, Kanal 2). Mit den Potentiometer (RA109/RA113 Kanal 1, RA209/RA213 Kanal 2) regelt man den CAL- respektive UNCAL-Bereich. Die Ausgänge dieser Stufen werden dem RECORD EQUALIZER BOARD, dem REPRODUCE EQUALIZER BOARD und via (W1) dem VU-PEAK BOARD zugeführt.

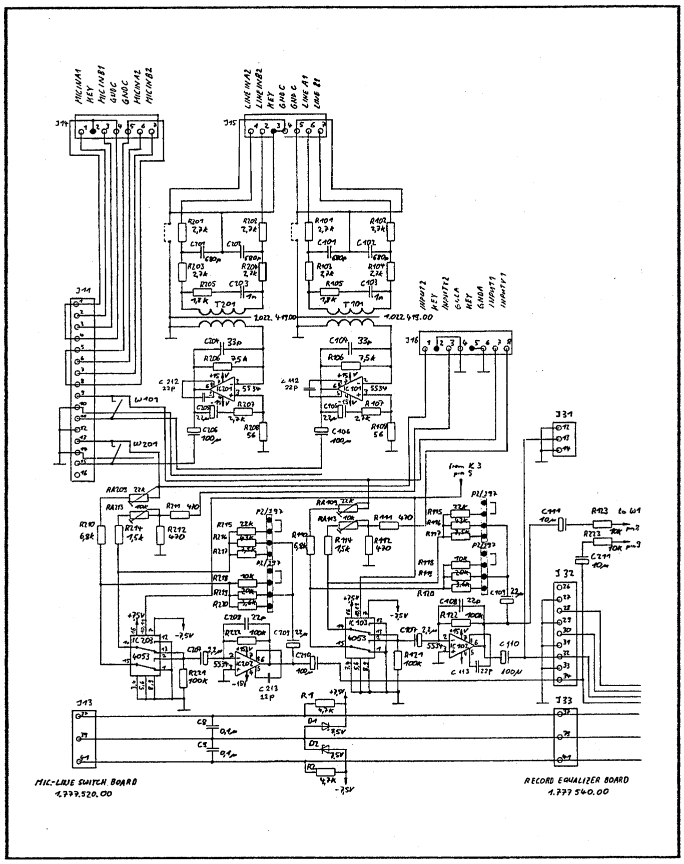
J14
J15
J16
J11
J31
J32
J33
J13
T201
T101
W101
W201
MIC-LINE SWITCH BOARD 1.777.520.00
RECORD EQUALIZER BOARD 1.777.540.00

Fig. 16

Weiter sind auf dem AUDIO BASIS BOARD die Kopfhörerverstärker (IC151/ Q151/Q152 Kanal 1 IC251/Q251/Q252 Kanal 2) und der Lautsprecherverstärker (IC301/Q301/Q302) vorhanden.

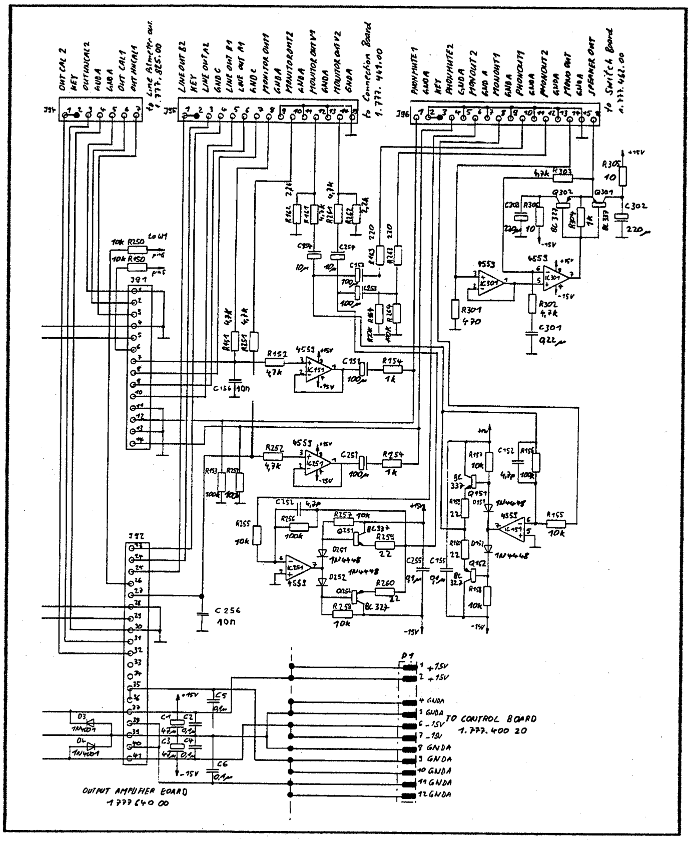
TO CONTROL BOARD
1.777.400 20
OUTPUT AMPLIFIER BOARD
1.777.540 00
4553
BC 337
1N4448
C 256
10n

Fig. 17

3.3.2 MIC-LINE-SWITCH-BOARD 1.777.520.00

Der MIC-LINE-SWITCH-BOARD ist als Option erhältlich. Sämtliche Schnittstellen werden über die Steckerbuchsen (J11/J13) des AUDIO-BASIS-BOARD geführt.

Die Mikrofonschaltung besteht aus einem Eingangstransformator (T101 Kanal 1, T201 Kanal 2 und einem rauscharmen Verstärker (IC101/Q101 Kanal 1, IC201/Q201 Kanal 2) der mittels Jumper für zwei Empfindlichkeiten programmierbar ist (P101 Kanal 1, P201 Kanal 2).

Der Verstärkerausgang wird einem Umschalter (IC102 Kanal 1, IC202 Kanal 2) zugeführt, der eine Mikrofon- oder Linien Wahl ermöglicht. Für den Mikrofonbetrieb müssen die Schalter (W101 Kanal 1, W201 Kanal 2), auf dem AUDIO BASIS BOARD offen sein. Im Mikrofonbetrieb speist der Umschalterausgang (IC103) die entsprechenden Cal-Uncal Stufen.

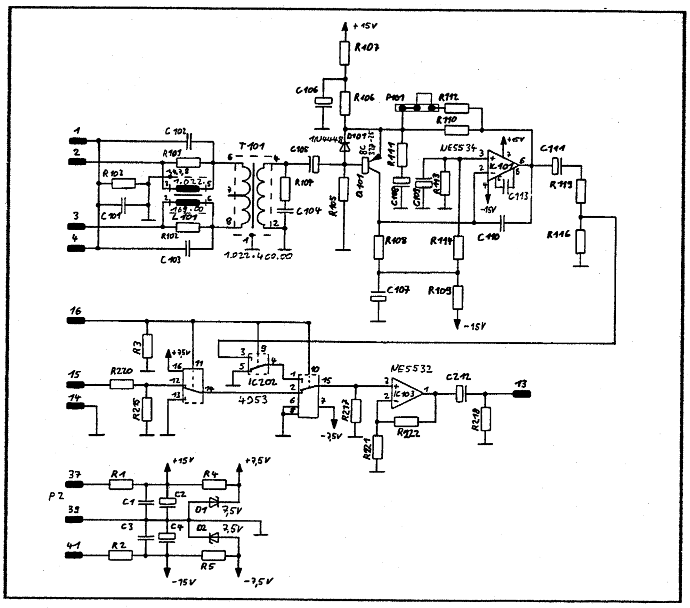
+15V
R107
C106
R106
R112
R110
T101
NE5534
IC101
C114
R113
R116
R108
C107
R109
-15V
NE5532
IC202
4053
C212
P2
-15V
-7,5V
+7,5V

Fig. 18 (CH1)

3.3.3 RECORD EQUALIZER BOARD 1.777.540.00

Sämtliche Schnittstellen werden über die Steckerbuchsen (J31/J32/J33) des AUDIO BASIS BOARD geführt. Das Eingangssignal durchläuft eine Equalisations-Stufe (IC101/IC104 Kanal 1, IC201/IC204 Kanal 2) und anschliessend eine Treble Stufe (IC101/IC102/IC103 Kanal 1 IC201/IC202/IC203 Kanal 2).

Als Equalisationsstufe dient ein für zwei Geschwindigkeiten umschaltbares Aktivfilter.

Aus Flexibilitätsgründen, NAB- oder IEC- Varianten, sind die frequenzgangbestimmenden Bauteile auf dem gesteckten RECORD SPEED PRINT untergebracht, Buchsenstecker (J1/J2). Die phasenlineare Trebleschaltung kann, für zwei Geschwindigkeiten, mit den Potentiometern (RA11/RA12 Kanal 1, RA21/RA22 Kanal 2) für den Frequenzgang und mit den Potentiometer (RA13/RA14 Kanal 1, RA23/RA24 Kanal 2) für den Pegel eingestellt werden.

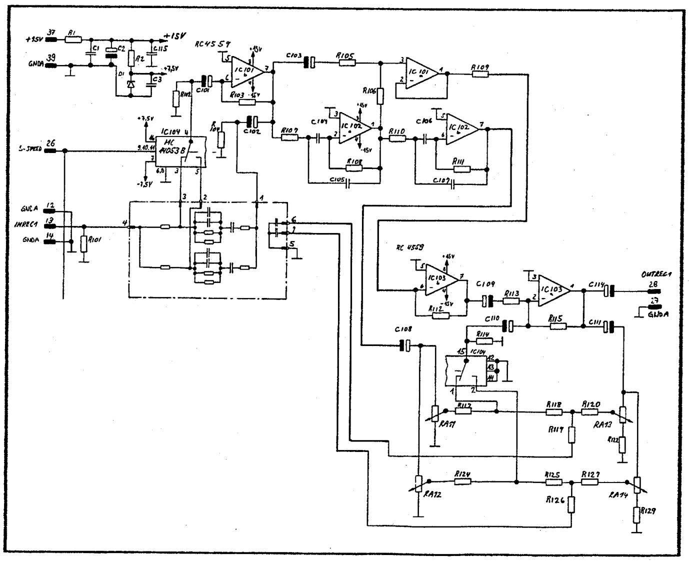
RA11
RA12
RA14
OUTREC1
GNDA

Fig. 19 (CH1)

3.3.4 RECORD SPEED BOARD IEC

Folgende, für die Entzerrungsfrequenz zuständige Record Speed boards nach IEC-Norm sind vorhanden:

- Record Speed board 3.75/7.50 IEC 1.777.550.00
- Record Speed board 7.50/15.00 IEC 1.777.552.00
- Record Speed board 3.75/15.00 IEC 1.777.554.00

3.3.5 RECORD SPEED BOARD NAB

Folgende, für die Entzerrungsfrequenz zuständige Record Speed boards nach NAB-Norm sind vorhanden:

- Record Speed board 3.75/7.50 NAB 1.777.556.00
- Record Speed board 7.50/15.00 NAB 1.777.558.00
- Record Speed board 3.75/15.00 NAB 1.777.559.00

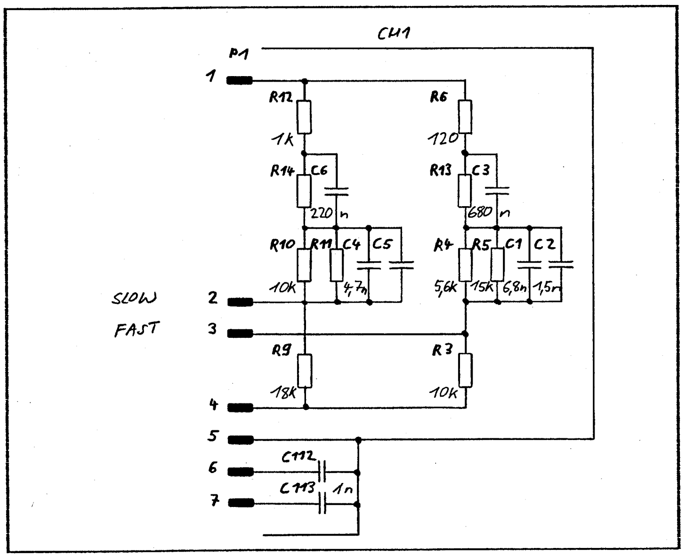

Fig. 20 (CH1)

3.3.6 ERASE AMPLIFIER BOARD 1.777.560.00

Sämtliche Schnittstellen werden über die Steckerbuchsen (J41/J42/J43), des AUDIO BASIS BOARDs gebildet.

Das 153,6 kHz Referenz-Rechtecksignal wird einem Tiefpassfilter und anschliessend einem Bandpassfilter (IC14/L1/C45/C46) zugeführt. Das so gewonnene Sinus-Signal dient als Eingangsreferenz für die Lösch- und Vormagnetisierungs-spannungsgesteuerten Verstärker (IC102 Erase, IC303 Bias).

Der Ausgang der spannungsgesteuerten Verstärker wird den Löschleistungsendstufen (Q101-Q107 Kanal 1, Q201-Q207 Kanal 2) zugeführt. Die Ausgänge gehen via Parallelschwingkreis (T101/C112/C113/C114Kanal 1, T201/C212/C213/C214 Kanal 2) und Relaiskontakt (K1 auf dem BIAS CONTROL BOARD) zum Löschkopf auf dem Kopfträger. Das Ein- und Ausschalten besorgt der (IC101). Die Potentiometer (RA108 Kanal 1, RA208 Kanal 2) dienen der Löschspannungseinstellung.

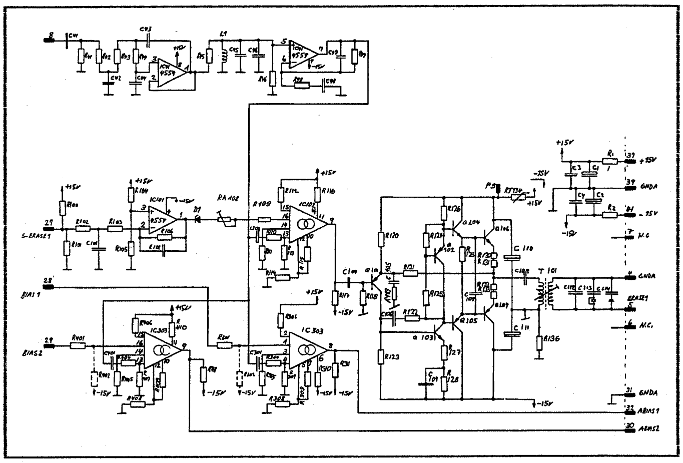

Fig. 21 (CH1)

3.3.7 BIAS CONTROL BOARD 1.777.570.00

Sämtliche Schnittstellen werden über die Steckerbuchsen (J51/J52/J53 für Kanal 1, und J61/J62/J63 für Kanal 2) gebildet.

Der Ausgang des spannungsgesteuerten Verstärkers (IC303 auf dem ERASE AMPLIFIER BOARD) wird der Vormagnetisierungsendstufe (Q4 bis Q10) zugeführt. Der Ausgang geht via Parallelschwingkreis (T1/C20/C21) und dem Record-Sync Umschalterelais (K1) zum Aufnahmekopf.

Das vom RECORD EQUALIZER BOARD kommende Audiosignal wird über eine Strom-Spannungsendstufe (IC1) und einem Bandpassfilter (L1/C7/C8/C9) dem obengenannten Schwingkreis zugeführt, was eine Überlagerung des Audio Aufnahmestromes mit dem HF-Vormagnetisierungsstrom bewirkt. Der Serieschwingkreis (L2/C10/C11) schliesst den HF-Kreis.

Der FET (Q3) und seine Ansteuerungsschaltung (Q1/Q2) bewirken eine knacksarme Freigabe des Audiosignals. Das gemischte HF-NF-Signal wird bewertet (R64/C23) und einem aktiven Gleichrichter zugeführt (IC2/D2/D3). Das gleichgerichtete Signal wird weiter einer Komparatorstufe (IC3) zugeführt. Die Referenz dieser Komparatorstufe wird, je nach gewählter Bandgeschwindigkeit (IC4), mit dem Potentiometer (RA1) resp. mit dem Potentiometer (RA2) eingestellt. Diese Referenzspannung legt den Vormagnetisierungsstrom fest.

Der Komparatorausgang liefert die Steuerspannung für den spannungsgesteuerten Verstärker auf dem Erase Amplifier Board. Diese HX-PRO-Regelschaltung bringt eine bessere Höhen- Aussteuerbarkeit bei grossem Pegel und höheren Frequenzen.

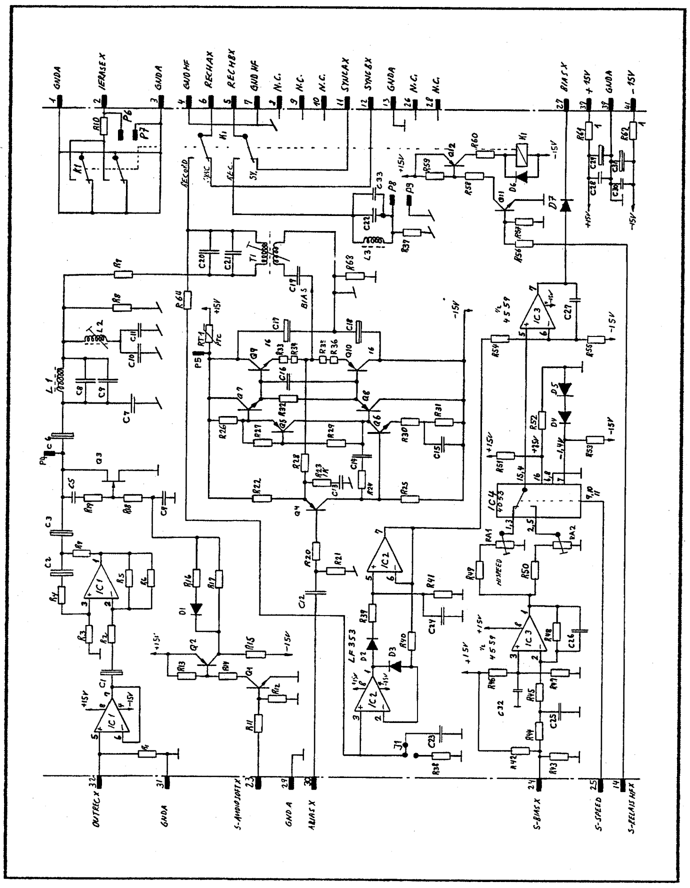
GNDA
ERASEX
GNDA
GND HF
RECMAX
RECMBX
GND HF
N.C.
SYNCAX
SYNCBX
BIASX
+15V
-15V
IC1
IC2
IC3
IC4
LF353
4558
BIAS
REPRO
SYNC
OUTRECX
GNDA
S-AMBDX
S-SPEED
S-RECALL MFX

Fig. 22

3.3.8 PREAMPLIFIER BOARD 1.777.610.00

Die Schnittstelle bilden die Steckerbuchsen (J71/72/J73).
Der Wiedergabekopf, auf dem Kopfträger, liefert die Eingangsspannung für die Wiedergabe- Vorverstärker (IC101/Q101 Kanal 1, IC101/Q201 Kanal 2). Der Aufnahmekopf auf dem Kopfträger liefert im SYNC Modus, die Eingangsspannung für die symmetrischen Transformatoren (T101 Kanal 1, T201 Kanal 2) und Sync-Wiedergabe Vorverstärker (IC102/Q102 Kanal 1, IC102/Q202 Kanal 2).
Je nach Vorwahl wird das Repro-Wiedergabe- oder Sync-Wiedergabe-Signal über einen Tiefpassfilter (L101/C107/C108/C109 Kanal 1, L201/C207/C208/C209 Kanal2) dem REPRODUCE EQUALIZER BOARD zugeführt.
Der FET (Q105/Q103/Q104 Kanal 1, Q205/Q203/Q204 Kanal 2) dient der knacksarmen Record-Sync-Umschaltung. Der Sync-Wiedergabepegel wird mit dem Potentiometer (RA171 Kanal 1, RA207 Kanal 2) eingestellt.

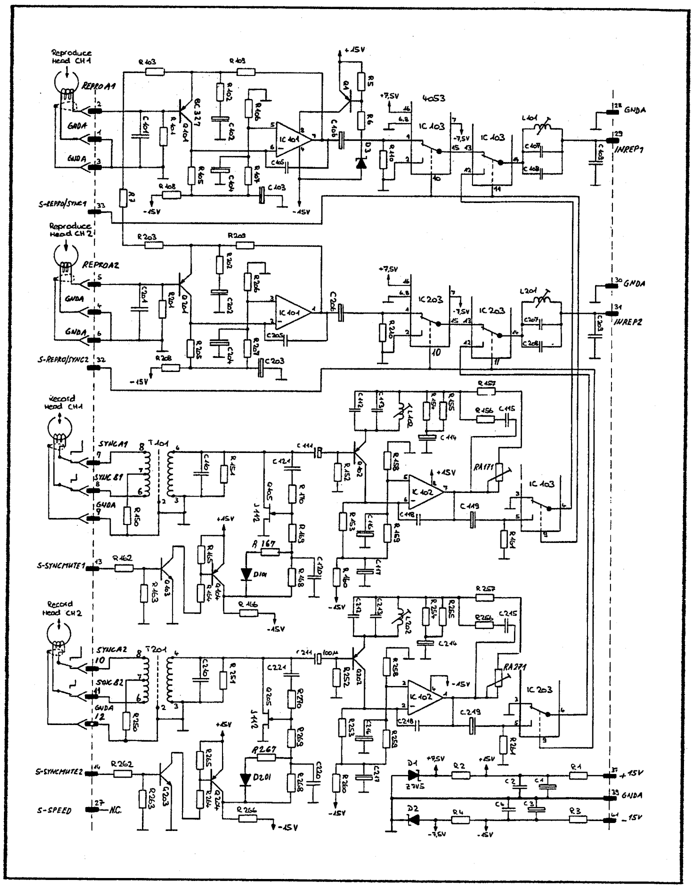
Reproduce Head CH1
REPROA1
GNDA
S-REPRO/SYNC1
Reproduce Head CH2
REPROA2
S-REPRO/SYNC2
Record Head CH1
SYNCA1
SYNCB1
S-SYNCMUTE1
Record Head CH2
SYNCA2
SYNCB2
S-SYNCMUTE2
S-SPEED
N.C.
T101
T201
IC101
IC102
IC103
IC201
IC202
IC203
4053
L101
L201
WREP1
WREP2
GNDA
+15V
-15V
+7.5V
-7.5V

Fig. 23

3.3.9 REPRODUCE EQUALIZER BOARD 1.777.620.00

Das Eingangssignal durchläuft eine Equalisationsstufe (IC101/ IC102 Kanal 1, IC201/IC202 Kanal 2) und anschliessend die Treble Stufe (IC101/IC102 Kanal 1, IC201/IC202 Kanal 2). Als Equalisationsfilter dient ein für zwei Geschwindigkeiten umschaltbares Aktivfilter.
Aus Flexibilitätsgründen, NAB- oder IEC-Varianten, sind die frequenzgangbestimmenden Bauteile auf dem gesteckten RREPRO SPEED BOARD untergebracht, Buchsenträger (J1/J2). Die Trebelschaltung kann für zwei Geschwindigkeiten, mit Potentiometer (RA112/RA118 Kanal 1, RA212/RA218 Kanal 2) für den Frequenzgang- und Potentiometer (RA116/RA122 Kanal 1, RA216/RA222 Kanal 2) für den Pegel eingestellt werden. Der Ausgang dieser Stufe wird einem Umschalter (IC103 Kanal 1, IC 203 Kanal 2) zugeführt der je nach Vorwahl Repro/ Sync oder Input wählt.
In Edit-Mode wird das Eingangssignal am Schalter (IC102 Kanal 1, IC202 Kanal 2) dem Pegel angepasst.

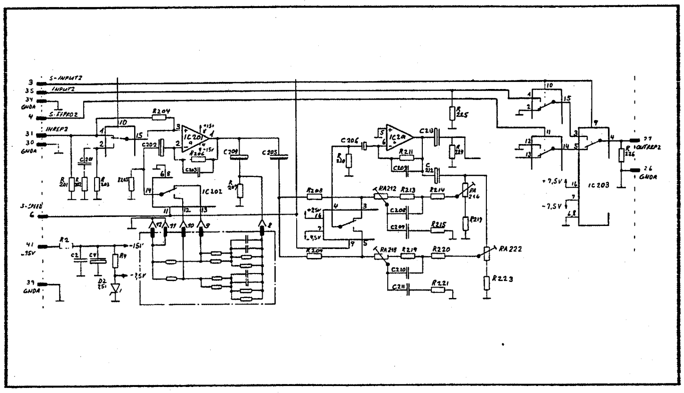

Fig. 24 (CH2)

3.3.10 REPRO SPEED BOARD IEC

Folgende, für die Entzerrungsfrequenz zuständige Repro Speed Boards nach IEC-Norm sind vorhanden:

▪ Repro Speed board	3.75 IEC	1.777.630.00
▪ Repro Speed board	7.50 IEC	1.777.632.00
▪ Repro Speed board	15.00 IEC	1.777.634.00

3.3.11 REPRO SPEED BOARD NAB

Folgende, für die Entzerrungsfrequenz zuständige Repro Speed boards nach NAB-Norm sind vorhanden:

▪ Repro Speed board	3.75 NAB	1.777.636.00
▪ Repro Speed board	7.50 NAB	1.777.638.00
▪ Repro Speed board	15.00 NAB	1.777.639.00

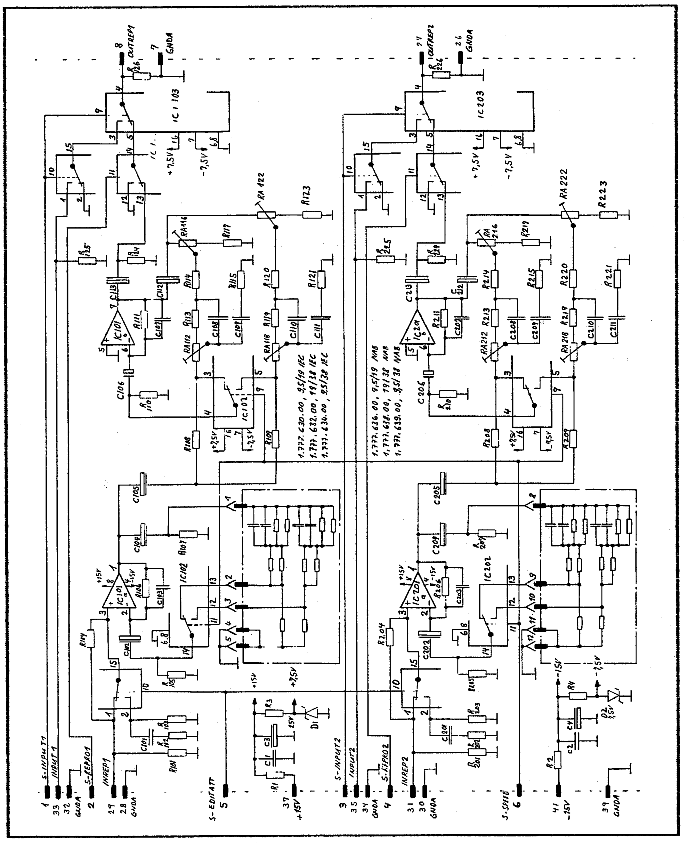

Fig. 25

3.3.12 OUTPUT AMPLIFIER BOARD
1.777.640.00

Die Schnittstelle bilden die Steckerbuchsen (J91/J92). Das einkommende Signal durchläuft den Cal- Uncal-Verstärker (IC101/IC102 Kanal 1, IC201/IC202 Kanal 2) und anschliessend den Leistungsausgangs-Verstärker (IC103/Q101/Q102 Kanal 1, IC203/Q201/Q202 Kanal 2). Mit den Potentiometern (RA100/RA101 Kanal 1, RA201/RA202 Kanal 2) regelt man den Cal- resp. Uncal- Bereich. Zusätzlich kann der Regelbereich mit Jumper angepasst werden. Ausgang (IC101/R101 Kanal 1, IC201/R201 Kanal 2) speist die Phonesstufe auf dem AUDIO BASIS BOARD. Der Ausgang der Cal- Uncal-Schaltung (IC101 Kanal 1, IC201 Kanal 2) speist den Repro-Eingang (IC8 Kanal 1, IC9 Kanal 2) des VU-PEAK BOARDs. Der Line-Ausgang ist symmetrisch (T1 Kanal 1, T2 Kanal 2) und mit Relaiskontakte (K1) gemutet.

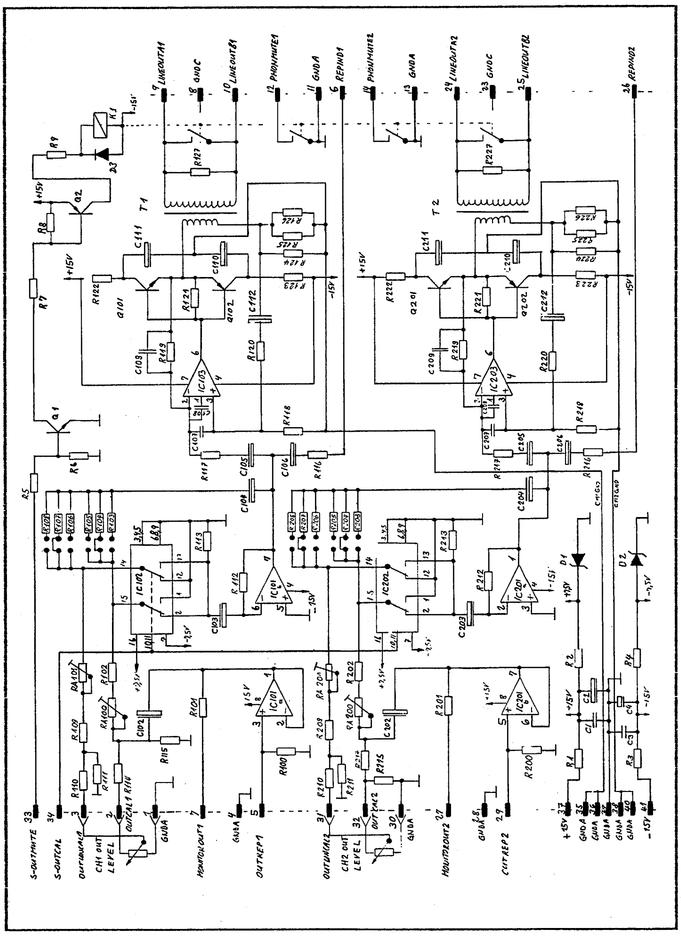

Fig. 26

3.3.13 AUDIO SWITCH BOARD 1.777.462.00

Auf dem AUDIO SWITCH BOARD befindet sich der Vorwahlschalter (S1) für die Monitor- und Kopfhörer-Ausgänge, die mit Potentiometer (RA5) im Pegel regelbar sind. Die Kopfhörer- Ausgangssignale werden dem Klinkenstecker (J4) zugeführt. Der kleine Lautsprecher, an (J8) angeschlossen, wird bei gestecktem Klinkenstecker oder mittels Schalter (Potentiometerschalter) ausgeschaltet.

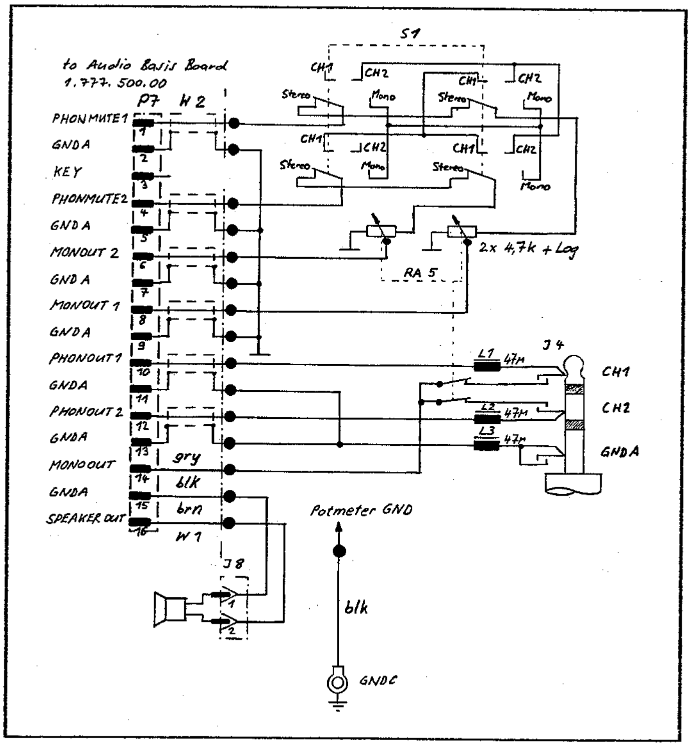
to Audio Basis Board
1.777.500.00
P7
W2
S1
CH1
CH2
Stereo
Mono
PHONMUTE1
GNDA
KEY
PHONMUTE2
GNDA
MONOUT 2
GNDA
MONOUT 1
GNDA
PHONOUT1
GNDA
PHONOUT2
GNDA
MONOOUT
GNDA
SPEAKER OUT
gry
blk
brn
W1
2x 4,7k + Log
RA 5
L1 47μ
L2 47μ
L3 47μ
J4
CH1
CH2
GNDA
Potmeter GND
blk
GNDC
J8

Fig. 27

3.3.14 VU-PEAK BOARD 1.777.460.00

Der VU-PEAK BOARD beinhaltet VU- und Peak- Anzeige. Das einkommende Eingangssignal, je nach Vorwahl (IC8/IC4 Kanal 1, IC9/ IC4 Kanal 2) Input oder Repro, wird einem aktiven Gleichrichter (IC3/D1/D2 Kanal 1, IC7/D101/D102 Kanal 2) zugeführt. Der Ausgang dieser Stufe speist das VU-Instrument (ME1 Kanal 1 ME2, Kanal 2) und nach einem Integrator die Peak-Komparatoren (IC1/IC2 Kanal 1, IC5/IC6 Kanal 2). Die Komparatorausgänge schalten, je nach Anzeigeschwelle (+6dB +9dB +12dB), via Treiber (Q1-Q3 Kanal 1, Q4-Q6 Kanal 2) die LEDs (DL8-10 Kanal 1, DL108-DL110 Kanal) ein. Mit den Potentiometern (RA2 Kanal 1, RA102 Kanal 2) stellt man die VU-Instrumente und mit den Potentiometern (RA3 Kanal 1, RA103 Kanal 2) die Peak-Anzeige ein. Mit den Potentiometern (RA1 Kanal 1, RA101 Kanal 2) stellt man nur den Wiedergabepegel für die VU + Peakanzeige ein. Für die Instrumenten-Beleuchtung sind 4 Lampen vorhanden (B1/B2 Kanal 1, B3/B4 Kanal 2).

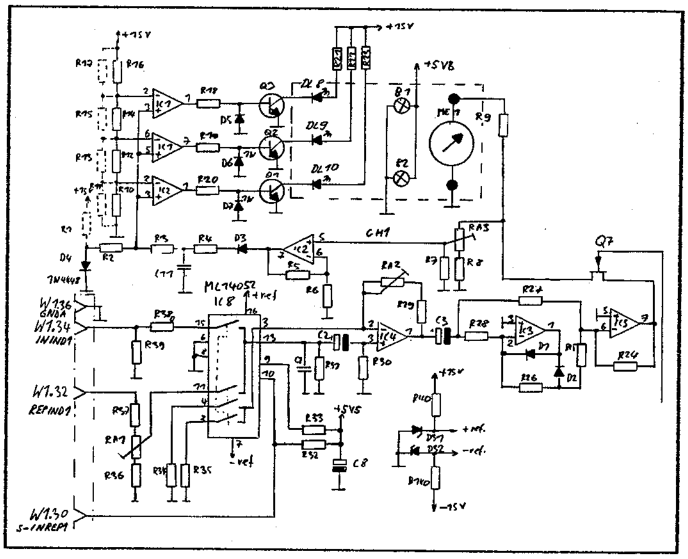
+15V
+5VB
B1
B2
ME1
R9
DL8
DL9
DL10
Q1
Q2
Q3
D5
D6
D7
IC1
IC2
CH1
RA3
Q7
IC2
RA2
ML14052
IC8
+ref
-ref
W1.36 GNDA
W1.34 INWD1
W1.32 REPWD1
W1.30 S-INREP1
IC4
IC3
IC5
D1
D2
D3
D4 1N4448
C8
-15V

Fig. 28 (CH1)

4. ABGLEICHANLEITUNG

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4.1 BENöTIGTE HILFSMITTEL

Folgende Geräte und Werkzeuge sind für den Abgleich notwendig:

▪ NF-Millivoltmeter	Best.Nr.: 46020
▪ NF-Generator	Best.Nr.: 46021
▪ Entmagnetisierungsdrossel	
Gross	Best.Nr.: 46595
Klein	Best.Nr.: 46596
▪ Federwaage, 500 Gramm	Best.Nr.: 46177
▪ EXTENDER BOARD	Best.Nr.: 46126
▪ Satz Verlängerungskabel	Best.Nr.: 46125
▪ Wiedergabereferenzband	
9,5 cm/s	Best.Nr.: 46003
19 cm/s	Best.Nr.: 46001
38 cm/s	Best.Nr.: 46002
▪ Frequenzzähler	Best.Nr.: 46025
▪ Kathodenstrahloszilloskop	auf Anfrage
▪ Analog-Multimeter	auf Anfrage
▪ Selektiv-Voltmeter	≤100 Hz
▪ Fettstift	
▪ Pinzette	
▪ Schraubendreher	Grösse: 00
▪ Schraubendreher	Grösse: 0
▪ Schraubendreher	Grösse: 2
▪ Schraubendreher	Grösse: 3
▪ Imbusschraubendreher	Grösse: 2.5

4.1.1 Allgemeine Hinweise

> Vorsicht:
> Elektrisierungsgefahr bei geöffnetem Gerät!
> Teile im Gerät führen Netzspannung.

Von STUDER REVOX angelieferte Module verlangen ein erneutes Einmessen des C270, ebenfalls nach Aenderungen an den einzelnen Modulen.
Muss der Aufnahme- oder Wiedergabekopf ausgewechselt werden, so ist die Maschine vorzugsweise an die nächste REVOX-Servicestelle einzusenden.

4.1.2 Entmagnetisieren

Das Tonbandgerät ausschalten und das Band genügend weit entfernen. Die Spitze der eingeschalteten Drossel langsam ganz nah an das zu entmagnetisierende Teil fahren und nach kurzer Zeit wieder langsam entfernen oder mit einem Regeltrafo langsam die Spannung von Min. auf Max. und wieder auf Min. drehen. Dieser Vorgang ist bei allen bandberührenden Metallteilen (Tonköpfe, Bandführungen, Umlenkrollen, Abhebebolzen) durchzuführen. Vor dem Ausschalten die Drossel vom Gerät entfernen (min. 50 cm).

ACHTUNG: Die Entmagnetisierungs-Drossel entmagnetisiert auch bespielte Tonbänder, wenn sie in deren Nähe gelangt!

4.1.3 Pegeldefinitionen

Der folgende Text soll die vielfältigen Pegelnormen die im Zusammenhang mit Audio-Messungen auftreten veranschaulichen.

- **Spannungspegel 0 dBm (= 0,775 V)**
  Diese Pegeldefinition entstand aus dem Leistungspegel von 1 mW in einem beliebigen Lastwiderstand. Über eine Last von 600 Ω fällt eine Spannung von 0,775 V ab.
  Diese Spannung ist (ohne Bezug auf eine Last) als Spannungspegel 0 dBm definiert.

- **0 dBu (= 0,775 V)**
  Dieser Pegel entspricht der Spannung von 0,775 V ohne Bezug auf einen Lastwiderstand. [dBu] wird gelegentlich anstelle des Spannnungspegels [dBm] verwendet.

- **Leitungspegel**
  Mit Leitungspegel wird derjenige Pegel definiert, der am Ausgang eines Tonbandgerätes beim Abspielen eines Bandes mit Referenzmagnetfluss anliegt,
  bzw. der, am Eingang eines Tonbandgerätes eingespeist, bei Aufnahme auf dem Band ein Referenzmagnetfluss erzeugt.

- **Spannungs-Bezugspegel**
  CCIR-Bezeichnung für Leitungspegel; dieser Pegel erzeugt auf einem Quasi-Spitzenwert-Pegelmesser (PPM, Peak Program Meter) eine Anzeige von 0 dB.

- **Standard Reference Level (Operating Level)**
  Eine in den USA gebräuchliche Bezeichnung für den Bandfluss von 250 nWb/m (zur Aufnahme auf High-Output-Bändern) bzw. 200 nWb/m (zur Aufnahme auf Standard-Bändern); dieser Pegel erzeugt auf einem VU-Meter eine Anzeige von 0 VU.

- **Peak Level**
  In den USA gebräuchliche Bezeichnung für einen Pegel, der 8 bis 10 dB grösser ist als der Operating Level. Aus Gründen der Vereinfachung kommt für die Einmessung eines Tonbandgerätes ein "Peak Level" von +6 dB bezogen auf den "Operating Level" (doppelter Spannungspegel) zur Anwendung.

- **IEC/CCIR-Einstellung**

DEFINITION:	LEITUNGSPEGEL [dBm]	VU-METER-ANZEIGE [dB]
BEZUGSPEGEL:	0	0

- **NAB-Einstellung**

DEFINITION:	LEITUNGSPEGEL [dBm]	VU-METER-ANZ. dB]
OPERATING LEVEL: "PEAK LEVEL":	+ 4 +10	0 +6

4.2 ABGLEICH MECHANIK

4.2.1 Allgemein

Bedingt durch das stabile Aluminium-Druckguss-Chassis und das 3-Motoren-Laufwerk ergibt sich ein weitgehend wartungsfreier Mechanikteil. Die Einstellungen und Messungen beschränken sich auf die wenigen beweglichen Teile.

4.3 KOPFTRÄGER

4.3.1 Bandführungen

Bandführungen [1,2] reinigen. Die Bandführung [2] auf keinen Fall verstellen. Wenn nötig, kann sie mit einem Kreuzschlitz-Schraubendreher vom Kopfträger entfernt werden [3].

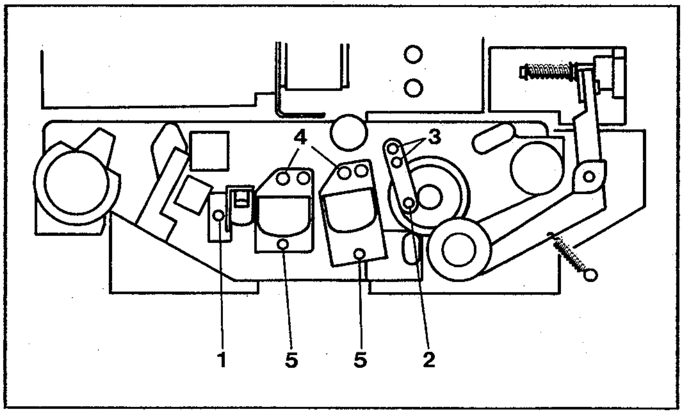


Fig. 1

4.3.2 Tonköpfe

Die jeweilige Tonkopfhöhe mit Hilfe eines Magnet oder Klarsichtbandes einstellen.

- Die Kopfspiegel von Wiedergabe- und Aufnahmekopf im Bereich des Kopfspaltes leicht mit einem Fettstift bestreichen. Das Magnetband kurz laufen lassen und kontrollieren ob der Kopfspalt in der Mitte des freigeschliffenen Bereichs liegt.
- Kopfspiegel reinigen.
- Höhenkorrekturen werden mit den Schrauben [4,5] (Fig. 1) vorgenommen.

4.4 BREMSEN

Die Bremsen sind wirksam, wenn der Bremsmagnet stromlos ist bzw. die STOP-Taste gedrückt wird.

4.4.1 Messung der Bremsmomente

Die Messwerte beziehen sich auf einen Kerndurchmesser der Leerspule von 115 mm.

- Leerspule auflegen und verriegeln.
- Einige Windungen einer feinen Schnur auf die Spule aufwickeln. Zur Messung der Bremsmomente wird am Ende der Schnur eine Federwaage befestigt.
  Mit der Federwaage langsam in die entsprechende Richtung ziehen. Werden die Werte auf der Zeichnung (Fig. 3) nicht erreicht, so ist das Bremssystem zu kontrollieren. Bremsbeläge und Bremsbänder müssen absolut sauber und fettfrei sein.

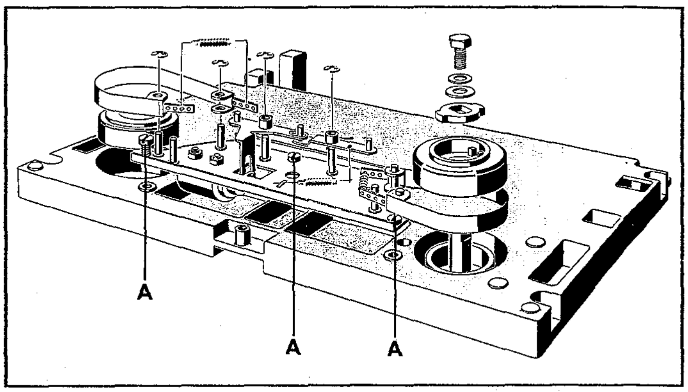


Fig. 3

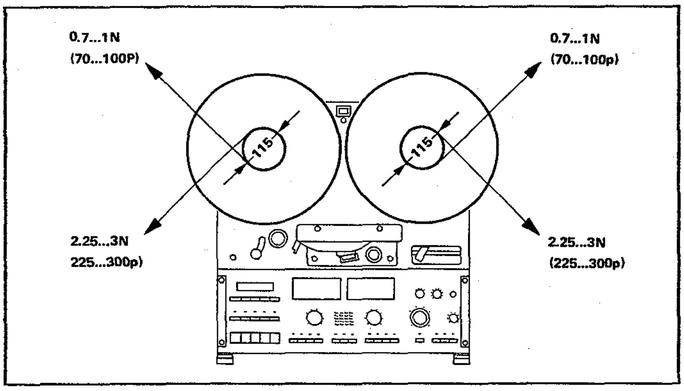


Fig. 2

4.4.2 Einstellen der Bremsen

Verschmutzte Bremsbeläge können mit Chlorothen gereinigt werden. Bremsbänder dürfen keine Knickstellen aufweisen und müssen auf ihrer ganzen Breite auf dem Bremsbelag aufliegen.
Nach dem Auswechseln von Bremsbändern oder Bremsrollen werden der Hub und die Bremsmechanik des Bremsmagneten folgendermassen eingestellt:

- Bremse von Hand lösen (Bremsanker einschieben).
- Kontrollieren, ob beide Bremssysteme durch die Abhebebolzen gleichzeitig gelüftet werden.

Ist dies nicht der Fall, kann das Bremschassis gelöst (drei Schrauben A, Fig. 3) und soweit verschoben werden, dass die Bremsbänder gleichzeitig abheben. Falls erforderlich, kann ein Bremseinstellhebel leicht gebogen werden.
Zum Einstellen des Bremsmagneten muss dieser erregt sein.

- Spulenteller abschrauben.
- Taste Play betätigen und die Bandwaage anheben.
- Befestigung des Bremsmagneten lösen und diesen so verschieben, dass keine Schleifgeräusche an den Bremstrommeln hörbar sind.
- Den Bremsmagneten arretieren.

4.5 ANDRUCKROLLE

Der Andruckarm wird elektromagnetisch betätigt. Der Andruck ist durch eine einstellbare Federspannung definiert.

4.5.1 Messen der Andruckkraft

- Taste Play drücken.
- Ohne eingelegtes Band die Bandwaage anheben und die Lichtschranke abdunkeln. An der Andruckrollen-Achse (oder an einem angebrachten Bolzen) einen Nylonfaden einhängen und mit einer Federwaage in Richtung A (Fig. 5) ziehen bis die Andruckrolle von der Tonwelle abhebt. Die Federwaage muss 10 N ±1 N (1 kp ±0,1 kp) anzeigen.

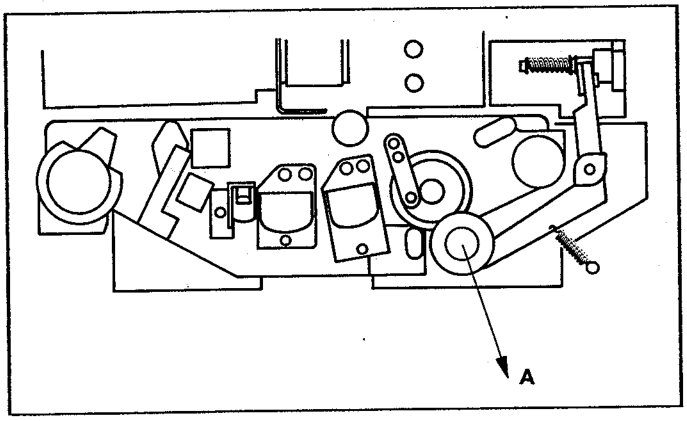


Fig. 4

4.5.2 Einstellung des Andruckaggregates

- Gerät auf Play schalten.
- Ohne eingelegtes Magnetband die Lichtöffnung am optischen Endschalter abdecken und die Bandwaage abheben.
- Andruckmagnet soweit nach rechts verschieben, dass zwischen Mitnehmer und Andruckarm ein Abstand B von 1 mm (Fig. 5) entsteht. Andruckmagnet arretieren.
- Kontrollieren, ob der Anker des Andruckmagneten am Anschlag steht. Andruckarm leicht von der Capstanwelle wegziehen, dabei darf sich der Anker nicht bewegen.
- Befestigungsschrauben des Andruckmagneten mit einem Lacktropfen sichern. Andruckkraft kontrollieren und, wenn nötig, mit Schraube C (Fig. 5) justieren.

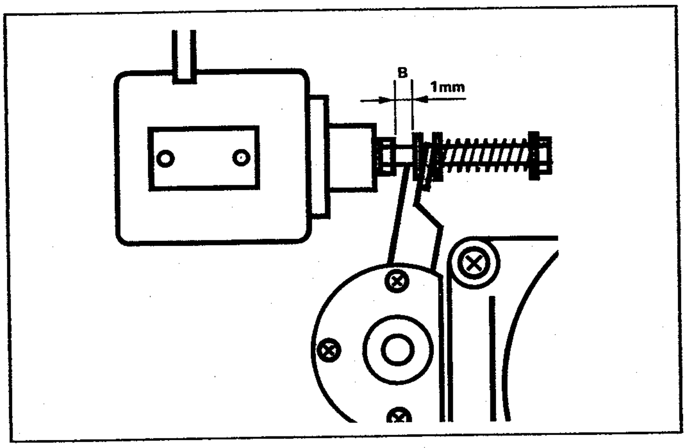


Fig. 5

4.6 LAUFWERKEINSTELLUNGEN

4.6.1 Vorbereitung

- CONTROL BOARD lösen und um 90 Grad nach hinten kippen. Elektrische Verbindungen, die unterbrochen werden müssen, mit Verlängerungskabeln wieder herstellen.
- Dip-Switch (SZ1) folgendermassen einstellen:

1	2	3	4	5	6	7	8
ON	OFF	OFF	OFF	OFF	OFF	ON	OFF

Diese Einstellung entspricht der Standardversion. Für allfällige Spezialversionen wird der Dip-Switch erst nach der Laufwerkeinstellung eingestellt.
Für div. Varianten siehe Abschnitt 3.2.2.

4.6.2 Capstan Abgleich

- Gerät einschalten und die Bandgeschwindigkeit SLOW (3.75ips bzw. 9,5cm/s) vorwählen. SPEED DEVIATION muss ausser Betrieb sein (VARIABLE off).
- Frequenzzähler auf den CAPSTAN SERVO BOARD an Messpunkt P2 anschliessen und mit L2 eine Frequenz von 5.5 MHz einstellen.
- Oszilloskop an Messpunkt P3 anschliessen, PLAY - Taste gedrückt halten und mit L3 auf maximale Signalamplitude abgleichen.
- PLAY-Taste gedrückt halten und mit dem Trimmpotentiometer RA2 den Capstan Motor auf minimale Lärmentwicklung abstimmen.
- SPEED DEVIATION-Potentiometer an den rechten Anschlag drehen, VARIABLE einschalten.
- Frequenzzähler am gemeinsamen Punkt von R13, R14 anschliessen und mit dem Trimmpotentiometer RA1 eine Frequenz von 14,4 khz einstellen.
- Gerät abschalten, Verlängerungskabel entfernen und das CONTROL BOARD montieren.

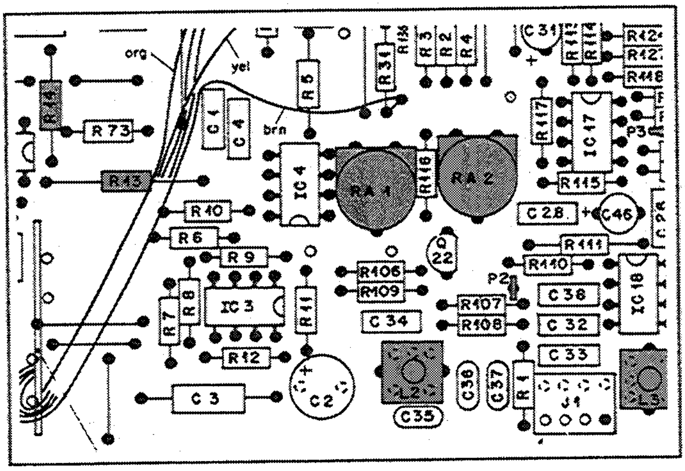


Fig. 6

4.6.3 Bandwaage Abgleich

Hinweis:
Für Geräte mit geänderter Bandwaage (2 Federn) ist der folgende Abgleichvorgang ebenfalls verbindlich.

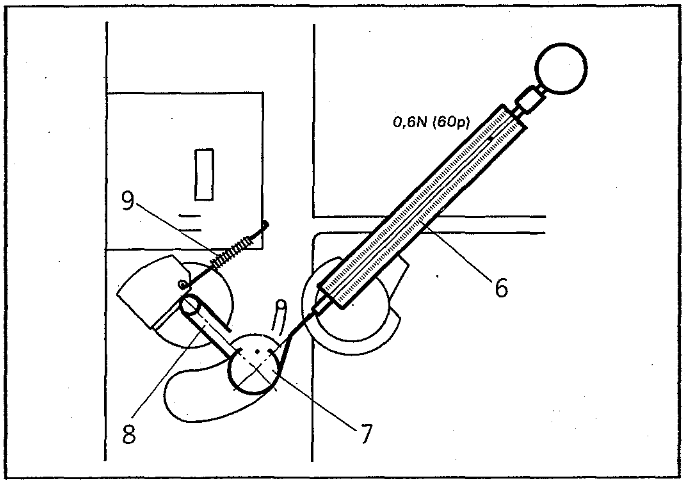


Fig. 7

- Laufwerkabdeckung entfernen
- Federwaage [6] an der *Bandrollenachse* [7] befestigen und rechtwinklig zum Fühlhebel [8] ziehen. Wenn der Fühlhebel ungefähr in der Mitte seines Arbeitsbereiches liegt, stellt man, durch Einhaken der Fühlhebelfeder [9] im entsprechenden Loch, einen Federwaagezug von 0.6N (60 p) ein.
- Abdeckung montieren.
- Ein Magnetband so auflegen, dass auf beiden Spulen ein Durchmesser von ca. 20 cm entsteht.
- Auf dem CONTROL BOARD (Fig. 8) das Oszilloskop an den Messpunkten P6 und P7 (Masse) anschliessen.
- Das Gerät einschalten.
- Mit dem Trimmpotentiometer RA3 eine Spannungsdifferenz zwischen unterem und oberem Fühlhebelanschlag von 4 V einstellen.
- Mit dem Trimmer RA2 eine Spannung von 4 V bei unterem Fühlhebelanschlag einstellen.
- Kontrollieren, ob sich die Spannung am Oszilloskop bei Bewegen des Fühlhebels vom unteren zum oberen Anschlag zwischen 4V und 0V verschiebt.
- Oszilloskop-Sonde entfernen und mit den Trimmpotentiometern RA7, RA6, RA5 (Fig.9) folgende Bandzüge einstellen:

FUNKTION	KRAFT ±15%	TRIMMPOT.
Forward	0,60 N (60 p)	RA7
Rewind	0,60 N (60 p)	RA6
Play	0,60 N (60 p)	RA5

- Magnetband spulen, dass beide Wickeldurchmesser ungefähr gleich gross sind (ca. 20cm).
- Edit vorwählen und mit dem Trimmpotentiometer RA4 (Fig.9) den Edit-Bandzug so einstellen, dass das Magnetband in beide Richtungen, bei gleich starkem Anstossen, ungefähr gleich weit ausläuft.

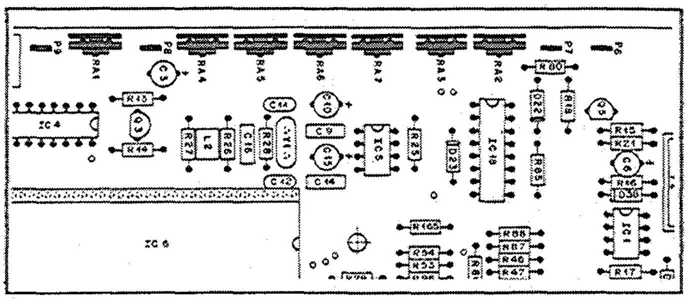


Fig. 8

4.6.4 Tape Sensor Einstellung

- Die Oszilloskop-Sonde auf dem CONTROL BOARD (Fig.9) an Messpunkt P8, P9 (Masse) anschliessen.
- Mit dem Trimmpotentiometer RA1 die Lichtschranke so abgleichen, dass mit dem Oszilloskop die Differenz zwischen Klarband (Oszilloskop-Spannung = 0V) und Magnetband (Oszilloskop-Spannung = +5V) gemessen werden kann.
- Gerät ausschalten und je nach Version mit Dip-Switch (SZ1) programmieren.

4.6.5 Zählerrollen Abgleich

Bei der Zählerrolle erübrigt sich einen elektrischen Abgleich.
Nach einer Reparatur o.ä. ist jedoch auf eine optimale Ausrichtung zwischen der Zählerrolle und dem TAPE MOVE SENSOR PCB 1.020.316.00 zu achten.
Die genauen Bedingungen sind in der Demontageanleitung, Kapitel 2.4.11 erläutert.

4.7 AUDIOEINSTELLUNGEN

4.7.1 Eingangsverstärker

Achtung: Messkabel generell mit 10kΩ Last abschliessen.
Die Fig. 20/21 sowie die Anschlussbuchsen-Zeichnung befinden sich auf der Ausklappseite am Ende dieser Abgleichanleitung.

- Die beiden Brückenschalter [W101,W201] (Fig. 20) auf dem AUDIO BASIS BOARD sind nur, wenn das Gerät mit dem MIC-LINE-SWITCH BOARD bestückt ist geöffnet.
- Den NF-Generator an den LINE INPUT CH1 anschliessen Pin 2/3).
- Das NF-Millivoltmeter an die MONITOR-Buchse anschliessen (DIN-Steckerbuchse Pin 1=CH1, Pin 4= CH2, Pin 6=GND)
- Das Tonbandgerät einschalten und beide Kanäle auf den INPUT-Modus vorwählen. Das Gerät muss im CAL-Modus betrieben werden.
- Mit dem Generator ein 1 kHz Sinussignal bei einem Eingangspegel von 0 dBm (IEC) oder +4 dBm (NAB) einspeisen (0 dBm = 0,775V).
- Mit dem CAL-Trimmpotentiometer [CH1=RA109, CH2=RA209] und den danebenliegenden Jumpern (Fig.20) auf dem AUDIO BASIS BOARD einen MONITOR-Ausgangspegel von -6 dB einstellen.
  Beachten Sie die folgende Tabelle "LINE INPUT Jumper Bereiche".
- UNCAL-Modus aktivieren, die beiden Potentiometer auf der Bedienungsfront, INPUT CH1 und INPUT CH2 auf Position 5 einstellen.
- In gleicher Weise wie zuvor, mit den UNCAL Trimmpotentiometern [CH1=RA113, CH2=RA213] und den danebenliegenden Jumpern (Fig.20) am MONITOR-Ausgang einen Pegel von -6 dB einstellen.
  Beachten Sie die folgende Tabelle "LINE INPUT Jumper Bereiche".

LINE INPUT Jumper Bereiche
Interner Referenzpegel: -6dB = 0VU
Potentiometerstellung: "5"

CAL. Stellung		UNCAL.		Jumper
min. (dB)	max. (dB)	min. (dB)	max. (dB)	H (High) M (Medium) L (Low)
-10	+1,5	-10	+4	H
-2	+9	0	+15	M
+4	+16	+6	+22	L

4.7.2 Ausgangsverstärker

Achtung: LINE OUTPUT generell mit 600Ω Last abschliessen. Für assym. Messgeräte Pin 1 + 3 des XLR kurzschliessen.

- Das NF-Millivoltmeter an LINE OUTPUT CH1 bzw. CH2 anschliessen.
- Den NF-Generator an den LINE INPUT CH1 anschliessen und ein Sinussignal von 1 kHz bei einem Eingangspegel von 0dBu (IEC) oder +4dBu (NAB) einspeisen.
- Ein- und Ausgangsverstärker auf CAL schalten.
- Mit dem CAL-Trimmpotentiometer (CH1=RA100, CH2=RA200) und den danebenliegenden Jumpern (Fig.20) auf dem OUTPUT AMPLIFIER BOARD einen Pegel von 0 dBu (IEC) bzw. +4 dBu (NAB) am NF-Millivoltmeter einstellen.
  Beachten Sie die folgende Tabelle "LINE OUTPUT Jumper Bereiche".
- Den Ausgangsverstärker in den UNCAL Modus schalten und die beiden Ausgangs-Potentiometer, Doppeldrehknopf auf der Bedienungsfront, auf Position 5 einstellen.
- In gleicher Weise wie zuvor, mit den UNCAL Trimmpotentiometern (CH1=RA101, CH2=RA201) und den danebenliegenden Jumpern (Fig. 20) am NF-Millivoltmeter einen Pegel von 0 dBu (IEC) bzw. +4 dBu (NAB) einstellen.
  Beachten Sie die folgende Tabelle "LINE OUTPUT Jumper Bereiche".
- Den Ausgangsverstärker wieder auf CAL schalten.
- Mit beiden Trimmpotentiometern INPUT ADJ. CH1 (RA2), INPUT ADJ. CH2 (RA102)auf der Rückseite der Bedienungsfront (Fig. 21), die VU-Meter zum Ausschlag 0 VU (IEC und NAB!) bringen.
- Am Generator den Pegel auf +9 dBu (IEC) bzw. +13 dBu (NAB) erhöhen.
- Mit den Trimmpotentiometern PEAK ADJ. CH1 (RA3), PEAK ADJ. CH2 (RA103) auf der Rückseite des Bedienteils (Fig. 21) die Peak-Anzeige so einstellen, dass die +9 VU-LED gerade zu leuchten beginnt.
- Die Input-Frequenzgangkontrolle mit gleichzeitiger Kontrolle des Frequenzganges der VU-Meter durchführen (Pegel 0 VU; Freq. 0 - 25 kHz).
- Kontrolle der Genauigkeit der Peak-Anzeige, +6 VU; +9 VU; +12 VU).

LINE OUTPUT Jumper Bereiche
Interner Referenzpegel: -6dB = 0VU
Potentiometerstellung: "5"

CAL. Stellung		UNCAL.		Jumper
min. (dB)	max. (dB)	min. (dB)	max. (dB)	H (High) M (Medium) L (Low)
-5	+15	0	+15	H
-10	+9	-10	+4	M
-20	-2	-20	-8	L

4.7.3 Löschkopf Anpassung

- Generator ausschalten
- Ein Leerband auflegen und das ERASE AMPLIFIER BOARD auf den EXTENDER BOARD stecken.
- Das Analog-Multimeter mit "-" an P5 (CH 1) oder P4 (CH2) des ERASE AMPLIFIER BOARDs (Fig. 9) und mit "+" an den Messpunkt 37 des Extender Boards anschliessen.
- Mit beiden READY-Tasten Aufnahme vorwählen und das Gerät auf Aufnahme starten.
- T101 (CH1) und T201 (CH2) so einstellen, dass das Multimeter das Spannungsminimum erreicht.

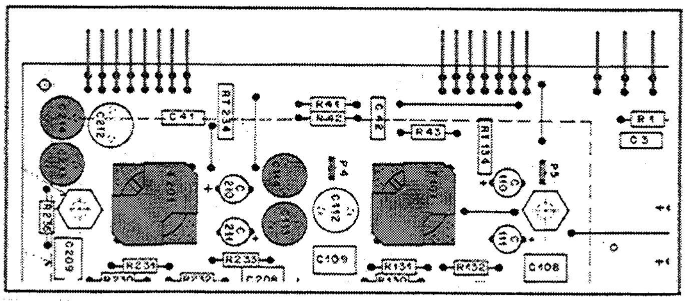


Fig. 9

- Wenn man weiterdreht und die Spannung nicht zunimmt oder beide Endanschläge erreicht sind, kann der Einstellbereich durch zulöten von C114 (CH1), C214 (CH2) oder durch abtrennen von C113 (CH1), C213 (CH2), an den dafür vorgesehenen Stellen auf der Leiterseite, verschoben werden.
- STOP-Taste drücken und das Gerät ausschalten.
- Das ERASE AMPLIFIER BOARD wieder vom EXTENDER BOARD abnehmen und einstecken.

4.7.4 Löschstrom einstellen

- Oszilloskop-Sonde am Messpunkt für den Löschstrom (ERASE CURRENT) und dem zugehörigen Massepunkt anschliessen (BIAS AMPLIFIER BOARD, Fig. 20).
- Gerät einschalten und beide Kanäle mit der READY-Taste vorwählen. Das Gerät auf Aufnahme starten.
- Mit den Löschstrom-Trimmpotentiometern RA1, RA2 (Fig. 20) für jeden Kanal einen Löschstrom von 600 mA Spitze-Spitze einstellen (1mV Spannung entspricht 1mA Strom).
- STOP-Taste drücken. Die Kopfspiegel von Wiedergabe- und Aufnahmekopf im Bereich des Kopfspaltes leicht mit einem Fettstift bestreichen. Das Magnetband kurz laufen lassen und kontrollieren, ob der Kopfspalt in der Mitte des freigeschliffenen Bereiches liegt, andernfalls siehe 4.3.2.
- Kopfspiegel reinigen.

4.7.5 Wiedergabe

- Gerät abschalten, Magnetbandlauf gründlich reinigen und Köpfe entmagnetisieren.
- NF-Millivoltmeter an LINE OUTPUT CH1 (CH2) anschliessen, Wiedergabereferenzband auflegen.
- Das Gerät einschalten, Ein- wie auch Ausgangsverstärker auf CAL und beide Kanäle auf REPRO vorwählen.
- Mit Referenzband auf 10 kHz abspielen.
- Phase mit Justierschraube [6] (Fig. 10) am Wiedergabekopf auf das Spannungsmaximum einstellen.

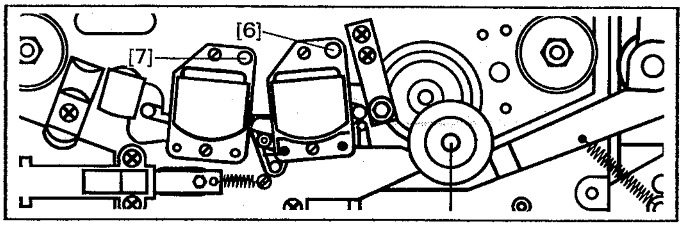


Fig. 10

- Die Ausgänge LINE OUTPUT CH1 und CH2 parallel an das Millivoltmeter anschliessen.
- Wiederum bei Wiedergabe mit 10 kHz des Referenzbandes auf Spannungsmaximum einstellen.
- Die beiden LINE OUTPUTs wieder getrennt behandeln.
- Im Pegeltonbereich bei einer Frequenz von 1 kHz mit den Pegel-Trimmpotentiometern:
  RA116 HS CH1
  RA216 HS CH2
  RA122 LS CH1
  RA222 LS CH2
  auf dem REPRODUCE EQUALIZER BOARD (Fig. 20) einen Ausgangspegel bei 257 nWb/m von 0 dB (IEC) respektive +4 dB (NAB) einstellen.
  Es gilt: 257 nWb/m 0 VU.
- Vorspulen zum 10 kHz Sektor.
- Mit den Treble-Trimmpotentiometern:
  RA112 HS CH1
  RA212 HS CH2
  RA118 LS CH1
  RA218 LS CH2
  auf dem REPRODUCE EQUALIZER BOARD (Fig. 20) den Ausgangspegel wieder je nach magnetischem Fluss einstellen.
- Mit Hilfe des Referenzbandes den Wiedergabefrequenzgang Kontrollieren.

4.7.6 Aufnahmekopf anpassen

- Magnetband auflegen und LINE INPUT CH1 Buchse kurzschliessen (alle 3 Pin-Buchsen gegeneinander).
- Bei ausgeschaltetem Gerät das BIAS AMPLIFIER BOARD auf den Extender Board stecken.
- Das Multimeter (-) an P5 (Fig. 14), (+) an Messpunkt 37 (EXT. BOARD) anschliessen. Oszilloskop-Sonde an P4 (Fig. 11), Masse an Messpunkt 39 (EXT. BOARD) anschliessen.
- Gerät einschalten READY vorwählen und auf Aufnahme starten.
- Mit T1 (Fig. 11) auf Spannungsminimum am Multimeter abgleichen.
- Mit L2 (Fig. 11) auf HF-Minimum am Oszilloskop abgleichen.
  Abgleich für Kanal 2 erfolgt sinngemäss auf gleiche Weise.
- EXTENDER BOARD entfernen, BOARD einsetzen.

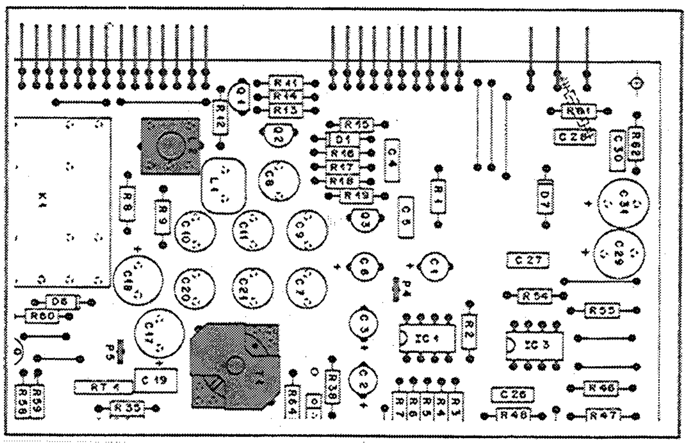


Fig. 11

- Mit Generator 10 kHz, bei einem Pegel von -20 dB am Eingang, einspeisen.
- LINE OUTPUT CH1 an das NF-Millivoltmeter anschliessen.

- Mit Justierschraube [7] des Aufnahmekopfes (Fig. 10) Spannungsmaximum am NF-Millivoltmeter einstellen.
- Beide LINE OUTPUT parallel an das NF-Millivoltmeter anschliessen.
- Mit Justierschraube [7] auf Ausgangsspannungsmaximum einstellen. (Auf Zeitverzögerung zwischen Aufnahme- und Wiedergabekopf achten)
- STOP Taste drücken und Gerät abschalten.

4.7.7 BIAS

- NF-Millivoltmeter und Generator (10 kHz -20dB) an LINE INPUT bzw. OUTPUT CH1 (CH2) anschliessen.
- Bias-Trimmpotentiometer CH1 RA108 (CH2 RA208), auf dem ERASE AMPLIFIER BOARD (Fig. 20), an den linken Anschlag drehen.
- Gerät einschalten, READY vorwählen und auf Aufnahme starten.
- Entsprechendes BIAS-Trimmpotentiometer langsam im Uhrzeigersinn drehen, bis das NF-Millivoltmeter das Ausgangsspannungsmaximum anzeigt.
- Vorsichtig im Uhrzeigersinn weiterdrehen, bis die Spannungsdifferenz (0) gemäss Fig. 12 erreicht ist.

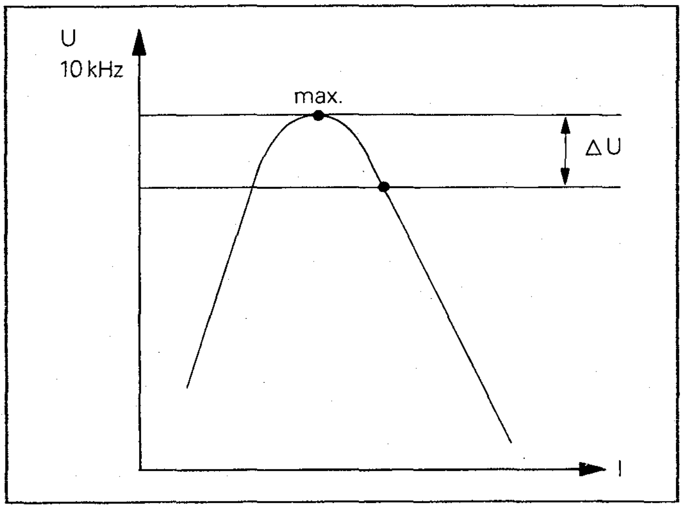


Fig. 12

Tape Speed	9.5 cm/s 3 3/4 ips	19cm/s 7 1/2 ips	38cm/s 15 ips
Type of Tape	ΔU(dB)	ΔU(dB)	ΔU(dB)
REVOX 601	5	4	3
REVOX 621	4,5	4	3
REVOX 631	6	6	4
REVOX 641	6	5	4
SCOTCH 206	5	4	3
SCOTCH 207	5	4	3
SCOTCH 226	6	6	4
SCOTCH 250	5	6	4
SCOTCH 256	6	6	4
SCOTCH 262/263	6	6	3
SCOTCH classic	5	5	3
Ampex 406	6	5	4
Ampex 407	6	5	4
Ampex 456	5	6	4
Agfa PEM 368	5	5	4
Agfa PEM 369	6	6	3
Agfa PEM 468	6	6	4
Agfa PEM 469	7	7	5
Agfa PER 525	6	5	3
Agfa PER 528	6	6	4
BASF LPR-35LH	6	5	4
BASF SPR50 LH(L)	6	5,5	3,5
BASF LGR 30P	6	5,5	4
BASF LGR 50	6	6	4
BASF LGR 51	6	6	4
BASF Studio Master 911	6	8	4,5
Maxell UD-XL	6	5	4
TDK AUDUA	6	5	4
EMI 816/817	6	6	4

4.7.8 Frequenzgang über Band

- 1 khz Sinussignal vom Generator mit −20 dBu (IEC) bzw. −16 dBu (NAB) einspeisen und während der Aufnahme bei Vorwahl REPRO, mit den entsprechenden Potentiometern (Fig. 20):
  RA13 MS CH1
  RA14 LS CH1
  RA23 MS CH2
  RA24 LS CH2
  auf dem RECORD EQUALIZER BOARD, einen Ausgangspegel von −20 dBu (IEC) bzw. −16 dBu (NAB) einstellen.
- Generatorfrequenz auf 10 kHz bei gleichbleibendem Pegel erhöhen und wie für 1 kHz die Ausgangspegel mit den Treble-Trimmern (Fig. 20):
  RA11 HS CH1
  RA12 LS CH2
  RA21 HS CH1
  RA22 LS CH2
  auf dem RECORD EQUALIZER BOARD einstellen. Der Frequenzgang ist entsprechend den Technischen Daten zu prüfen (siehe 4.7.10).
- Generatorfrequenz 1 kHz einstellen und den Pegel auf 0 dBu (IEC), +4 dBu (NAB) erhöhen.
- Mit den REPRO ADJ.-Trimmpotentiometern (Fig. 21) am Bedienteil den VU-Meter Ausschlag auf 0 VU einstellen (RA1 CH1, RA101 CH2).

4.7.9 Sync-Verstärker

- PPREAMPLIFIER BOARD auf den EXTENDER BOARD stecken.
- Oszilloskop-Sonde an Messpunkt 28 (Masse) und 29 für Kanal 1 respektive 30 (Masse) und 31 für Kanal 2 anschliessen. Sämtliche Messanschlüsse befinden sich auf dem Extender-Board.
- Beide LINE INPUTs kurzschliessen (jeweils alle 3 Pins gegeneinander), READY und REPRO vorwählen. Gerät auf Aufnahme starten.
- Mit L101 (CH1) bzw. L201 (CH2) auf minimale HF am Oszilloskop einstellen (Fig. 13).
- Gerät auf STOP und Oszilloskop mit Masse an Messpunkt 39 des Extender Boards und am PREAMPLIFIER BOARD an Pin 5 IC103 (CH1) bzw. Pin 5 IC203 (CH2) anschliessen (Fig. 12).
- Beide Kanäle auf Sync vorwählen und eine zuvor gelöschte Bandstelle abspielen (kein neues Band).
- Mit L102 (CH1) bzw. L202 (CH2) auf minimale HF am Oszilloskop einstellen (Fig. 12).

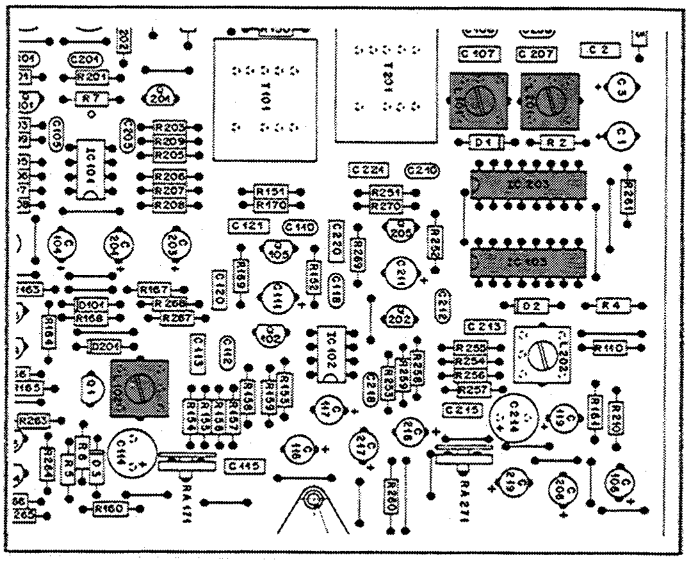

C204
R201
R7
C204
C103
IC101
C203
R203
R209
R205
R206
R207
R208
T101
T201
C107
C207
C2
C3
C1
D1
R2
C224
C210
R151
R170
R251
R270
IC203
R261
C121
C140
C220
R269
Q205
R252
C104
C204
C203
Q105
R169
R152
C118
C211
IC103
C120
C111
C212
R163
R167
R266
R267
D101
R168
R164
D201
Q102
IC102
Q202
D2
R4
C213
R255
R254
R256
R257
L202
R110
C113
C112
R158
R159
R153
R253
R259
R258
C218
R165
Q1
R263
R154
R155
R156
R157
C117
C215
C214
C119
R161
R210
R6
R5
Q3
C114
C445
C116
C247
C216
R264
RA171
R260
RA271
C219
C206
C106
R160
R265

Fig. 13

- Gerät auf Stop und ausschalten. Extender Board entfernen.
- Auf beiden Kanälen eine Frequenz von 1 khz bei einem Pegel von 0 dB (IEC) resp. +4 dB (NAB) während ca. 1 Minute aufzeichnen.
- Die zuvor aufgezeichnete Bandstelle abspielen und mit den SYNC REPRODUCE Trimmpotentiometern RA171 CH1 (RA271 CH2) auf dem PREAMPLIFIER BOARD (Fig. 20) einen Pegel von 0 dBu (IEC) resp. +4 dBu (NAB) einstellen.

4.7.10 Frequenzgangkontrolle über Band

- Die Frequenzgangkontrolle über Band wird bei einem Generatorpegel von −20 dB durchgeführt.
- Anschliessend kann das Band an den Anfang der Frequenzgang-Kontrolle zurückgespult und bei nochmaligem abspielen der Sync-Frequenzgang überprüft werden.

4.8 MESSEN VERSCHIEDENER KENNDATEN

4.8.1 Klirrfaktor über Band

Die Klirrfaktormessung für Bandgeräte erfordert einen K3-Filter (3. Harmonische). Entsprechend dem vorhandenen Filter muss die NF-Generatorfrequenz (500 Hz) gewählt werden (Filterfrequenz: 1500 Hz).
Die Messung bezieht sich auf Vollaussteuerung.

- NF-Generator am Eingang INPUT CH1 CH2 anschliessen.
- Frequenz einstellen.
- Klirrfaktor-Messgerät am Ausgang anschliessen.
- Neues Band auflegen und Aufnahme starten. Klirrfaktor messen; die Referenzwerte sind aus den Technischen Daten ersichtlich.

4.8.2 Geräuschspannungs-/Fremdspannungsabstand über Band

- Die Geräuschspannungs- und Fremdspannungsabstände beziehen sich auf Vollaussteuerung.

Geschwindigkeit	IEC	NAB
9,5 cm/s	400nW/m	400nW/m (0 VU +3,8dB)
19 cm/s	514nW/m	514nW/m (0 VU +6,0 dB)
38 cm/s	514nW/m	514nW/m (0 VU +6,0 dB)

Um Messfehler durch HF-Einstreuungen zu vermeiden, wird mit einem auf dem Gerät gelöschtem Band gemessen.

- NF-Millivoltmeter am Ausgang LINE OUTPUT CH1 (CH2) anschliessen.
- Gerät auf Wiedergabe starten und Geräuschspannungs- sowie Fremdspannungsabstand mit entsprechendem Filter messen. Werden die Werte nicht erreicht, sind die Bandführungen und Tonköpfe nochmals sorgfältig zu entmagnetisieren.

4.8.3 Löschdämpfung

Zum Messen der Löschdämpfung wird eine NF-Frequenz aufgezeichnet und anschliessend gelöscht. Die auf dem Band verbleibende Aufzeichnung wird gemessen. Die Messung bezieht sich auf Vollaussteuerung.

- Die NF-Generatorfrequenz von 1 kHz vorwählen.
- NF-Millivoltmeter am OUTPUT CH1 (CH2) anschliessen, Filter eingeschaltet. NF-Generator am INPUT CH1 (CH2) anschliessen 0 VU +6 dB.
- Neues Band auflegen, Aufnahme starten und eine kurze Aufzeichnung vornehmen. Maschine auf STOP setzen und an den Bandzeichnungsanfang zurückspulen.
- Generator ausschalten.
- Maschine auf Aufnahme starten und Löschdämpfung messen.

4.8.4 Uebersprechen Mono

Für diese Messung wird empfohlen ein neues Magnetband zu verwenden. Die Messung bezieht sich auf Vollaussteuerung.
Gerät im CAL-Modus betreiben.

- Der NF-Generator (1 kHz) an den LINE INPUT CH1 anschliessen. Band einlegen und eine Aufnahme (nur CH1) von ca. 1 Minute Dauer vollziehen.
- Magnetband an den Aufzeichnungsanfang zurückspulen.
- Selektives Voltmeter am LINE OUTPUT CH2 anschliessen.
- Gerät auf Wiedergabe schalten und das Uebersprechen CH1 -> CH2 messen.
- Zur Aufzeichnung des rechten Kanals auf Bandabschnitt ohne Aufzeichnung vorspulen.
- Der NF-Generator an den LINE INPUT CH2 anschliessen. Dieselbe Aufnahme von CH2 auf CH1 wiederholen.
- Selektives Voltmeter am LINE OUTPUT CH1 anschliessen.
- Gerät auf Wiedergabe schalten und das Uebersprechen CH2 -> CH1 messen.

4.8.5 Uebersprechen Stereo

Die Messung bezieht sich auf Vollaussteuerung.
Für die Messung der Stereoübersprechdämpfung wird der

- NF-Generator an den LINE INPUT CH1 anschliessen. Selektives Voltmeter am LINE OUTPUT CH2 anschliessen.
- NF-Generator auf 1 kHz einstellen, Vollaussteuerung.
- Gerät auf Aufnahme (CH1 + CH2) starten und Uebersprechdämpfungswert auf CH2 messen.
- NF-Generator an den LINE INPUT CH2 anschliessen. Selektives Voltmeter am LINE OUTPUT CH2 anschliessen. Aufnahme starten und Uebersprechdämpfungswert auf CH1 messen.

4.8.6 Tonhöhenschwankungen

Die in den technischen Daten spezifizierten Gleichlaufwerte sind mit einem Tonhöhenschwankungsmesser nach DIN 45507 zu messen.

FRONT VIEW 1.777.500.00
(WITH UNITS)

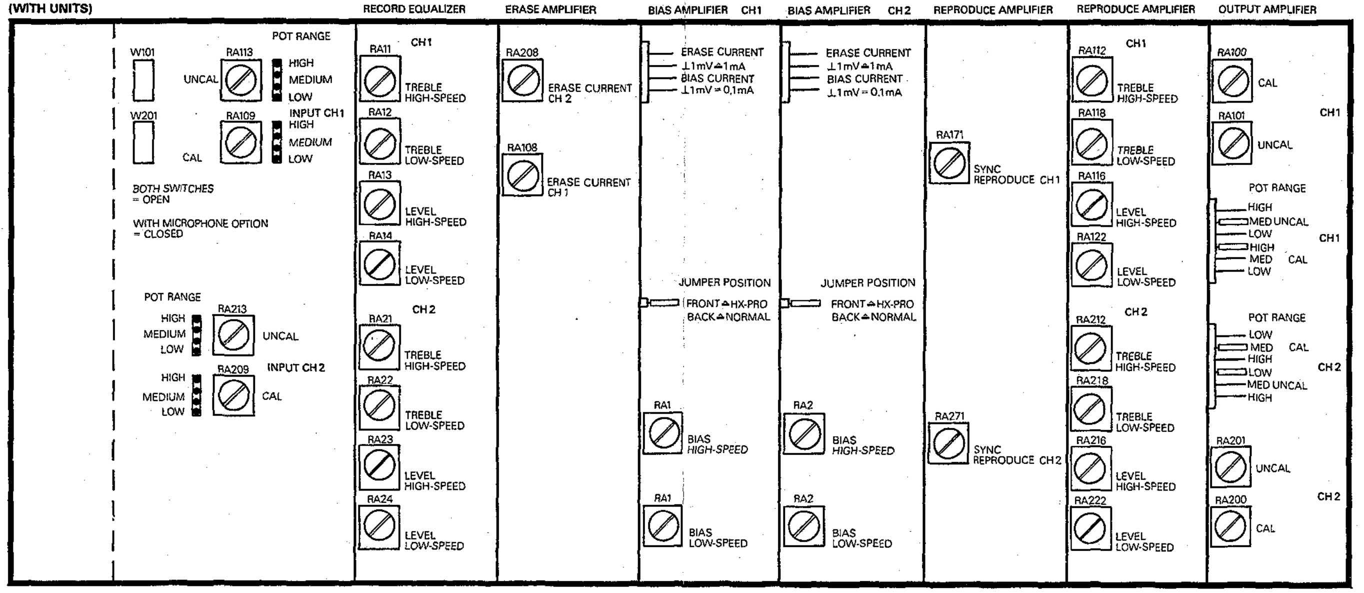

RECORD EQUALIZER
ERASE AMPLIFIER
BIAS AMPLIFIER CH1
BIAS AMPLIFIER CH2
REPRODUCE AMPLIFIER
REPRODUCE AMPLIFIER
OUTPUT AMPLIFIER
W101
W201
RA113
RA109
UNCAL
CAL
POT RANGE
HIGH
MEDIUM
LOW
INPUT CH1
BOTH SWITCHES = OPEN
WITH MICROPHONE OPTION = CLOSED
RA213
RA209
INPUT CH2
CH1
CH2
RA11 TREBLE HIGH-SPEED
RA12 TREBLE LOW-SPEED
RA13 LEVEL HIGH-SPEED
RA14 LEVEL LOW-SPEED
RA21 TREBLE HIGH-SPEED
RA22 TREBLE LOW-SPEED
RA23 LEVEL HIGH-SPEED
RA24 LEVEL LOW-SPEED
RA208 ERASE CURRENT CH 2
RA108 ERASE CURRENT CH 1
ERASE CURRENT
⊥1mV≙1mA
BIAS CURRENT
⊥1mV≙0,1mA
JUMPER POSITION
FRONT≙HX-PRO
BACK≙NORMAL
RA1 BIAS HIGH-SPEED
RA1 BIAS LOW-SPEED
RA2 BIAS HIGH-SPEED
RA2 BIAS LOW-SPEED
RA171 SYNC REPRODUCE CH1
RA271 SYNC REPRODUCE CH2
RA112 TREBLE HIGH-SPEED
RA118 TREBLE LOW-SPEED
RA116 LEVEL HIGH-SPEED
RA122 LEVEL LOW-SPEED
RA212 TREBLE HIGH-SPEED
RA218 TREBLE LOW-SPEED
RA216 LEVEL HIGH-SPEED
RA222 LEVEL LOW-SPEED
RA100 CAL
RA101 UNCAL
RA201 UNCAL
RA200 CAL
MED UNCAL
MED CAL

Fig 20

FRONT PANEL, BACK SIDE

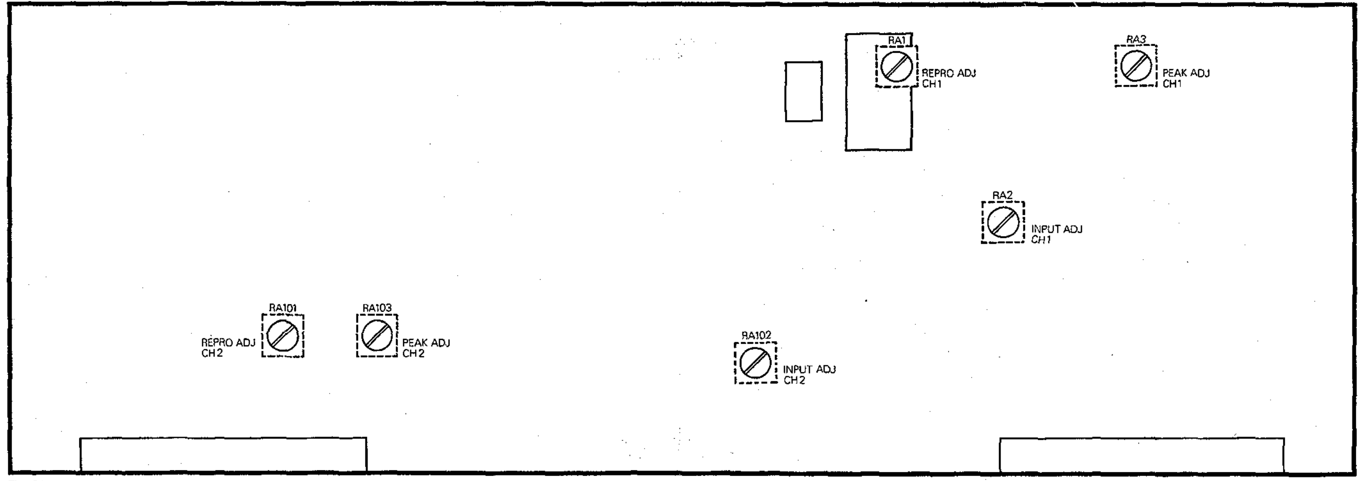
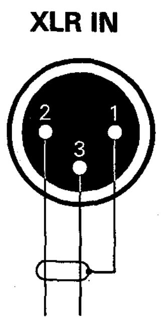
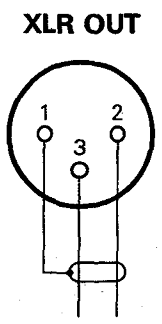
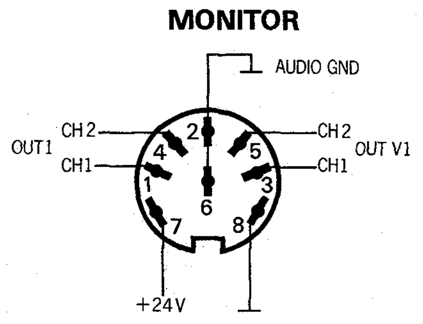

RA1 REPRO ADJ CH1
RA3 PEAK ADJ CH1
RA2 INPUT ADJ CH1
RA101 REPRO ADJ CH2
RA103 PEAK ADJ CH2
RA102 INPUT ADJ CH2

Fig 21






MONITOR
AUDIO GND
OUT1
CH2
CH1
CH2
CH1
OUT V1
1
2
3
4
5
6
7
8
+24V

5. TECHNISCHE DATEN

Alle bandspezifischen Audio-Daten beziehen sich auf die Bandsorten:
- IEC-Version: AGFA PEM 468
- NAB-Version: 3M 226

Gerätetyp:	2-Kanal Tonbandmaschine
Bandlauf:	1/4" Bandbreite (6,35 mm)
Laufwerk:	3-Motoren-Laufwerk: 2 geregelte AC-Wickelmotoren, 1 hall-kommutierter Capstan Motor, elektronisch geregelt.
Bandgeschwindigkeiten:	9,5/19, 19/38 oder 9,5/38 cm/s über interne Schalter wählbar.
Toleranz der Sollgeschw.:	± 0,2 %
Varispeed-Bereich:	- 33 % bis + 50 % der Nominalgeschw.

Tonhöhenschwankungen: (bewertet nach DIN 45507)		für Kerndurchm. ≥ 10cm	für Kerndurchm. ≥ 6cm
	bei 9,5 cm/s	< 0,10 %	< 0,1 %
	bei 19 cm/s	< 0,07 %	< 0,1 %
	bei 38 cm/s	< 0,05 %	< 0,1 %

Schlupf:	max. 0,2 %
Startzeit (nach DIN):	max. 500 ms bei 38 cm/s
Umspulzeit:	ca. 130 s für 1100 m Band ca. 90 s für 760 m Band
Spulengrösse:	Max. Durchmesser: 265 mm
Laufwerksteuerung:	Mit Mikroprozessor-Logik gesteuert, unter Einbezug von Bandendschalter, Status der Zählerrolle und der Bandzughebel-Position. Tape-Dump und Faderstart möglich.
Bandzähler:	Echtzeit-Anzeige in Std. Min. Sek. entsprechend der gewählten Bandgeschwindigkeit. Genauigkeit: 0,25 % Zero-Locator, Address-Locator und Schleifenbetrieb (LOOP) möglich.

Entzerrungen:	NAB und IEC als steckbare Einsätze im Aufnahme- und Wiedergabepfad.		
	NAB	9,5 cm/s:	90 - 3180 µs
		19 cm/s:	50 - 3180 µs
		38 cm/s:	50 - 3180 µs
	IEC	9,5 cm/s:	90 - 3180 µs
		19 cm/s:	70 µs
		38 cm/s:	35 µs

Frequenzgang:	(über Band, bei -20 VU)		
	bei 9,5 cm/s	30 Hz..14 kHz	± 2 dB
		50 Hz.. 8 kHz	± 1 dB
	bei 19 cm/s	30 Hz..18 kHz	± 2 dB
		50 Hz..12 kHz	± 1 dB
	bei 38 cm/s	30 Hz..22 kHz	± 2 dB
		50 Hz..16 kHz	± 1 dB

Frequenzgang für Taktspur-Wiedergabe (SYNC):

bei 9,5 cm/s	100 Hz.. 5 kHz	+2/-3 dB
bei 19 cm/s	100 Hz.. 8 kHZ	+2/-3 dB
bei 38 cm/s	100 Hz..12 kHz	+2/-3 dB

Vollaussteuerung:	514 nWb/m, entspricht:	+6 dB über 0 VU
Aussteuerungsanzeige:	VU-Meter nach ASA-Norm mit LED-Peak-Anzeigen für Pegel von:	+6, +9, +12 dB

Klirrfaktor:	(k3 bei 1 kHz)	
	9,5 cm/s (400 nWb/m)	< 1,5 %
	19 cm/s (514 nWb/m)	< 1,2 %
	38 cm/s (514 nWb/m)	< 1,0 %
Störspannungsabstand:	(über Band)	
		linear / A-bewertet IEC179
IEC-Version:	9,5 cm/s (400 nWb/m)	> 56 dB / 61 dB
	19 cm/s (514 nWb/m)	> 58 dB / 64 dB
	38 cm/s (514 nWb/m)	> 59 dB / 65 dB
		linear / A-bewertet IEC179
NAB-Version:	9,5 cm/s (400 nWb/m)	> 56 dB / 61 dB
	19 cm/s (514 nWb/m)	> 60 dB / 65 dB
	38 cm/s (514 nWb/m)	> 59 dB / 64 dB
Übersprechdämpfung:	Stereo bei 1 kHz	> 50 dB
	Mono bei 1 kHz	> 70 dB
Löschdämpfung:	bei 19 cm/s	besser -80 dB
	bei 38 cm/s	besser -75 dB
Eingänge pro Kanal:	(0 dBu = 0,775 V)	
LINE IN:	symmetrischer Eingang (XLR) mit Trenn-Transformator,	
	Eingangsimpedanz	> 5 kΩ
	CAL (IEC): für 514 nWb/m	+ 6 dBu
	Einstellbereich	-10...+16 dBu
	CAL (NAB): für Operation Level (0 VU)	+ 4 dBu
	Einstellbereich	-10...+16 dBu
	UNCAL: Erhöhung um jeweils +10 dB möglich.	
	Max. Pegel: für f > 40 Hz	+22 dBu
Mikrofon-Eingänge:	(nachrüstbar)	
	symmetrischer Eingang (XLR) mit Trenn-Transformator.	
Eingangsimpedanz:	40 Hz..15 kHz	> 1,2 kΩ
Empfindlichkeit:	Stellung "LO"	-70 dBu ... -36 dBu
	Stellung "HI"	-38 dBu ... - 8 dBu
	Max. Pegel	- 8 dBu
Ausgänge pro Kanal:	(0 dBu = 0,775 V)	
LINE OUT:	symmetrischer Ausgang (XLR) mit Trenn-Transformator,	
	Ausgangsimpedanz	80 Ω
	CAL (IEC): für 514 nWb/m, 600 Ω	+ 6 dBu
	Einstellbereich	-20...+15 dBu
	CAL (NAB): für OP-Level (0 VU), 600 Ω	+ 4 dBu
	Einstellbereich-20...+15 dBu	
	UNCAL: Erhöhung um jeweils +10 dB möglich.	
Max. Pegel:	an 600 Ω	+22 dBu
	an 200 Ω	+20 dBu
Phones:	Jack-Buchse Ø 6,3 mm, kurzschlussfest	
Ausgangsspannung:	bei 514 nWb/m	max. 5,6 V
	für 0 VU	2,8 V
	Ausgangsimpedanz:	220 Ω
Monitor:	8-polige DIN-Buchse	
Ausgangsspannung:	bei 514 nWb/m	max. 1,8 V
	für Fremdspeisung	+ 24 V
	Ausgangsimpedanz:	4,7 kΩ
RS-232:	7-polige DIN-Buchse, serielle Schnittstelle mit 9600 Bd, 24 V-Speisung für Handfernbedienung oder externen Locator. Vollduplex, 3-Draht-Verbindung (GND, Tx, Rx), 1 Startbit, 1 Stopbit, 8 Datenbits, keine Parität, Software Handshaking (Xon / Xoff).	
Fader/Sync:	8-polige DIN-Buchse für Faderstart und Syncronisation des Capstan-Motors. Anschluss für Daten-Tonkopf.	
Netzanschluss:	3-polig mit Schutzerde	
Stromversorgung:	(Spannungswähler)	
	100, 120, 140, 200, 220, 240 V AC	50 ... 60 Hz
Leistungsaufnahme:	max.	125 W

Netzsicherung:	100 ... 140 V:T 2,5 A / 250 V (SLOW)	
	200 ... 240 V:T 1,25A / 250 V (SLOW)	
Betriebsbedingungen:	Umgebungstemperatur+10°C ...+40°C	
	rel. Luftfeuchtigkeit (DIN 40040)	Klasse F
Betriebslage:	beliebig zwischen horizontal und vertikal.	
Gewicht:	inkl. Rackwinkel	23 kg
Aussenabmessungen:	mit Rackwinkel (B·H·T)	482·443·202 mm
	ohne Rackwinkel	434·443·202 mm
	Einbaubreite mit Rackwinkel	442 mm

$^1/_4$-Spur Variante:

Störspannungsabstand:	(über Band)	
		linear / A-bewertet IEC179
IEC-Version:	9,5 cm/s (400 nWb/m)	> 52 dB / 57 dB
4 Spur	19 cm/s (514 nWb/m)	> 54 dB / 60 dB
	38 cm/s (514 nWb/m)	> 55 dB / 61 dB
		linear / A-bewertet IEC179
NAB-Version:	9,5 cm/s (400 nWb/m)	> 52 dB / 57 dB
4 Spur	19 cm/s (514 nWb/m)	> 56 dB / 61 dB
	38 cm/s (514 nWb/m)	> 55 dB / 60 dB

MONO - Variante:	Pegeleinstellungen	NAB	IEC
	Input-Output Line:		
	Input	1,23V/+4dBu	1,55V/+6dBu
	Monitor	0,39V/-6dBu	0,775V/0dBu
	Output	1,23V/+4dBu	1,55V/+6dBu
	Wiedergabe ab Messband:	3,75 7,5 15ips	9,5 19 38cm
	Bandfluss nWb/m	200 200 200	250 320 320
	Monitor	0,39V/-6dBu	0,775V/0dBu
	Output	1,23V/+4dBu	1,55V/+6dBu
	VU - Meteranzeige	0VU	+6VU
	Aufnahmepegel- Einstellung bei Line:		
	Input-Tape-Output	1,23V/+4dBu	1,55V/+6dBu
	0VU - Anzeige bei Line:		
	Input/Output	1,23V/+4dBu	0,775V/0dBu
	Einstellung der Peak LED bei Line Input für:		
	LED +6 dB	2,45V/+10dBu	1,55V/+6dBu
	LED +9 dB	3,46V/+13dBu	2,18V/+9dBu
	LED +12dB	4,90V/+16dBu	3,1V/+12dBu

Änderungen vorbehalten

ENGLISH

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1. GENERAL

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1.1 POWER CONNECTION

Verify that the setting of the line voltage selector corresponds to the local line voltage.

If the voltage doesn't match, the line voltage selector setting must be changed and the rating of the primary fuses should be checked.

Fuse ratings:

100 ... 140 VAC: 2.5 A / 250V (slow)

200 ... 240 VAC: 1.25A / 250V (slow)

1.2 OPERATOR CONTROLS

ELEMENT	FUNCTION
[1] POWER:	Power switch, switches the recorder on and off.
[2]:	Left-hand spindle, supply motor.
[3]:	Right-hand spindle, take-up motor
[4]:	Tacho roller for real-time counter
[5]:	Light barrier for detecting the transparent tape leader or a torn tape.
[6]:	Tape sensor arm, controls the tape tension.
[7]:	Real-time counter, displays the actual playing time in hours, minutes, and seconds as well as system parameters.
[8] SEL:	selects one numeric position of the display for modification with the STEP [9] key.
[9] STEP:	Step key, modifies the numeric display position selected with SEL [8] in one-step increments.
[10] TRANS:	Stores the tape position displayed on the real-time counter in the address locator (A-LOC). The displayed value can first be modified by means of the SEL [8] and STEP [9] keys.
[11] SEARCH:	Positions the tape at the address defined on the display with the SEL [8] and STEP [9] keys without overwriting the old content of the address locator (A-LOC) with the new address.
[12] RESET:	Reset key, resets the real-time counter to zero (00.00.00).
[13] Z-LOC:	Zero locator, positions the tape at the address 00.00.00. PLAY mode can be preselected.
[14] A-LOC:	Address locator, positions the tape at the address stored in the A-LOC with the TRANS [10] key. PLAY mode can be preselected.
[15] LOOP:	Activates the LOOP mode. The recorder endlessly plays the tape section between the tape address 00.00.00 and the address stored in the A-LOC. The address in the A-LOC may be negative. This function can be cancelled by pressing the LOOP key again or any tape transport key.

[16] T-DUMP:	Switches the waste basket (tape dump) mode on or off. The right-hand spooling motor is switched off; the unwanted tape sections can be played into the "waste basket" by means of the PLAY [20] function.
[17] EDIT:	Switches the edit mode on or off. By rotatled backward and forward in order to find a specific tape segment.
[18]: <<	Rewind key for fast rewinding of the tape. The tape is wound up on the left-hand pancake.
[19]: >>	Fast forward key for spooling the tape forward. The tape is wound up on the right-hand pancake.
[20] PLAY:	Reproduces the tape. Is used in conjunction with the REC [22] key for activating the record mode.
[21] STOP:	When this key is pressed, all tape deck functions and all selected modes except dump edit mode are cancelled.
[22] REC:	To be pressed together with PLAY [20] for enabling the record mode. Recordings can only be made on channels switched to READY.
[23]:	VU-meter for indicating the level of channel 1 (left) with three peak level LEDs for +6, +9, and +12 dB.
[24] READY:	Readies channel 1 (left) for recording. The red LED above the key flashes. During a recording, i.e. after REC [22] and PLAY [20] have been pressed, this LED is continuously lit.
[25] INPUT:	Output selector. The input signal is indicated on the VU-meter [23] and can be monitored via the outputs.
[26] SYNC:	Output selector. The recording is reproduced via the record head with limited frequency response. Permits recording of channel 2 in synchronism with an existing recording on channel 1.
[27] REPRO:	Output selector. The recording is reproduced via the reproduce soundhead. This function can also be activated while a recording is in progress so that the quality of a recording can be continually checked (tape/source monitoring). The signal from the reproduce head is also available on the VU-meter [23] and the monitor outputs.
[28] INPUT CH 1:	Input level control for channel 1. In the UNCAL [30] position it influences the recording level of channel 1.
[29] MIC:	Input selector. Activates the recording via microphone (both channels). This function can only be selected if the tape recorder is equipped with the optional MIC/LINE SWITCH BOARD.
[30] UNCAL:	Activates the uncalibrated record mode. The record level can be adjusted via the INPUT CH 1 [28] and INPUT CH 2 [37] level potentiometers. This mode is automatically activated by the input selector [29].
[31] LINE:	Input selector. Activates the recording path via the LINE INPUT CH 1 and LINE INPUT CH 2. Recording with calibrated or uncalibrated (UNCAL [30] level is possible in this mode.
[32]:	VU-meter for indicating the level of channel 2 (right) with three peak level LEDs for +6, +9, and +12 dB.
[33] READY:	Readies channel 2 (right) for recording. The red LED above the key flashes. During a recording, i.e. after REC [22] and PLAY [20] have been pressed, this LED is continuously lit.
[34] INPUT:	Output selector. The input signal is indicated on the VU-meter [32] and can be monitored via the outputs.
[35] SYNC:	Output selector. The recording is reproduced via the record head with limited frequency response. Permits recording of channel 1 in synchronism with an existing recording on channel 2.
[36] REPRO:	Output selector. The recording is reproduced via the reproduce head. This function can also be activated while a recording is in progress so that the quality of a recording can be continually checked (tape/source monitoring). The signal from the reproduce head is also available on the VU-meter [32] and the outputs.
[37] INPUT CH 2:	Input level control for channel 2. In the UNCAL [30] position it influences the recording level of channel 2.
[38] OUTPUT CH 1/2:	Output level potentiometer for channel 1 (inner knob) and channel 2 (outer ring). In the UNCAL [39] position of the reproduce amplifier, the output level of the LINE OUTPUT CH 1 and LINE OUTPUT CH 2 can be influenced by means of these level potentiometers.

[39] UNCAL:	Activates the uncalibrated reproduce mode. The output level can be adjusted by means of the level potentiometers OUTPUT CH 1 and OUTPUT CH 2 [38].
[40] SLOW:	Switches to the slower of the two available tape speeds. If this key is pressed continuously, the nominal tape speed is shown in "ips" (inches per second) on the display [7].
[41] FAST:	Switches to the faster of the two available tape speeds. If this key is pressed continuously, the nominal tape speed is shown in "ips" (inches per second) on the display [7].
[42] VARIABLE:	Activates the varispeed mode (variable tape speed). The tape speed can be influenced with the SPEED DEVIATION [43] potentiometer.
[43] SPEED DEVIATION:	Potentiometer for steplessly varying the tape speed in varispeed mode (VARIABLE [42] key) within the range of -33% to +50% of the selected nominal speed.
[44] SELECTOR:	Monitor selector switch. Influences the reproduction via the monitor speaker and the monitor socket. The outputs LINE OUTPUT CH 1 and LINE OUTPUT CH 2 are not affected.
[45] PHONES:	Headphones socket. The built-in monitor speaker is switched off when the headphones are plugged in.
[46] VOLUME:	Volume control. Varies the volume of the built-in monitor speaker as well as the headphones output. The monitor speaker can be switched on by pulling out this knob and switched off by pushing it in.
[47]	Pinch roller presses the tape against the capstan shaft. Optimum tape movement is only ensured if this roller is in perfect condition (undamagedant).
[48]:	Tape scissors and splicing block. Permits convenient cutting and splicing of the tape.
[49]:	Cutting mark. If the tape is held in this position and inserted into the splicing block [48] in such a way that the position on which the cutting mark was located is aligned with the right-hand side of the housing, that tape address which previously was located before the head gap of the reproduce head will be located under the scissors.
[50]:	Fixing screws of the control panel.

1.3 CONNECTOR PANEL

CONNECTOR	FUNCTION
[51] LINE OUTPUT CH 2:	Output for channel 2. In the UNCAL position [39], the output level can be influenced with the OUTPUT CH 1/2 [38] potentiometer.
[52] LINE OUTPUT CH 1:	Output for channel 1. In the UNCAL position [39], the output level can be influenced with the OUTPUT CH 1/2 [38] potentiometer.
[53] MONITOR:	Output for an additional monitor amplifier with speakers.
[54] FADER/SYNC FREE HEAD:	Input for a TTL signal (0 V, +5 V) for external control of the tape speed within the range of −33% to +50%. Control frequency for nominal speed: 9.6 kHz. ▪ Fader start input ▪ Free-head connections
[55] RS232	Serial control port (RS 232, 9600 baud) for establishing a link to a PC.
[56] LINE INPUT CH 2:	Line input channel 2 (XLR, balanced) for connecting a signal source (amplifier, mixing console).
[57] LINE INPUT CH 1:	Line input channel 1 (XLR, balanced) for connecting a signal source (amplifier, mixing console).
[58] MIC INPUT CH 2:	Microphone input channel 2 (XLR, balanced)
[59] MIC INPUT CH 1:	Microphone input channel 1 (XLR, balanced)
[60] AC POWER:	Power inlet and line voltage selector.

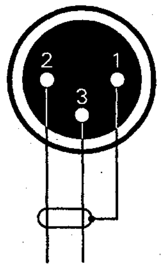
1.4 PIN ASSIGNMENT

XLR sockets, IEC 268-14

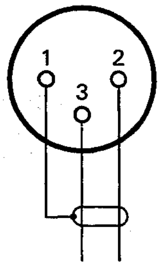
1 Audio ground
2 A-line (hot) *
3 B-line (cold)

* The A-line is hot when the wiring of the XLR sockets is unbalanced.

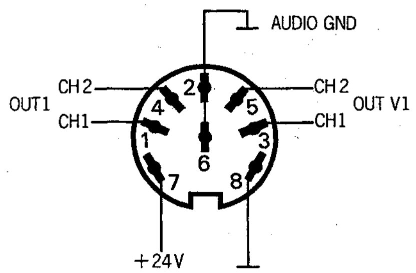
XLR IN [58] [59]



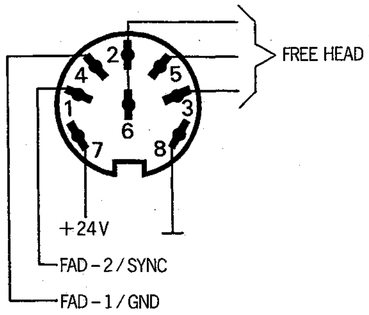
XLR OUT [51] [52]



MONITOR [53]


AUDIO GND
OUT1
CH2
CH1
CH2
CH1
OUT V1
1
2
3
4
5
6
7
8
+24V

FADER/SYNC [54]
FREE HEAD


FREE HEAD
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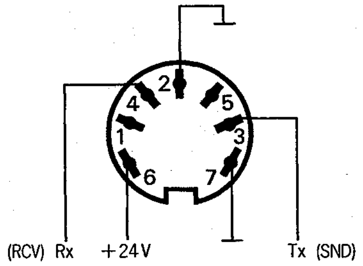
2
3
4
5
6
7
8
+24V
FAD-2 / SYNC
FAD-1 / GND

RS-232 [55]


1
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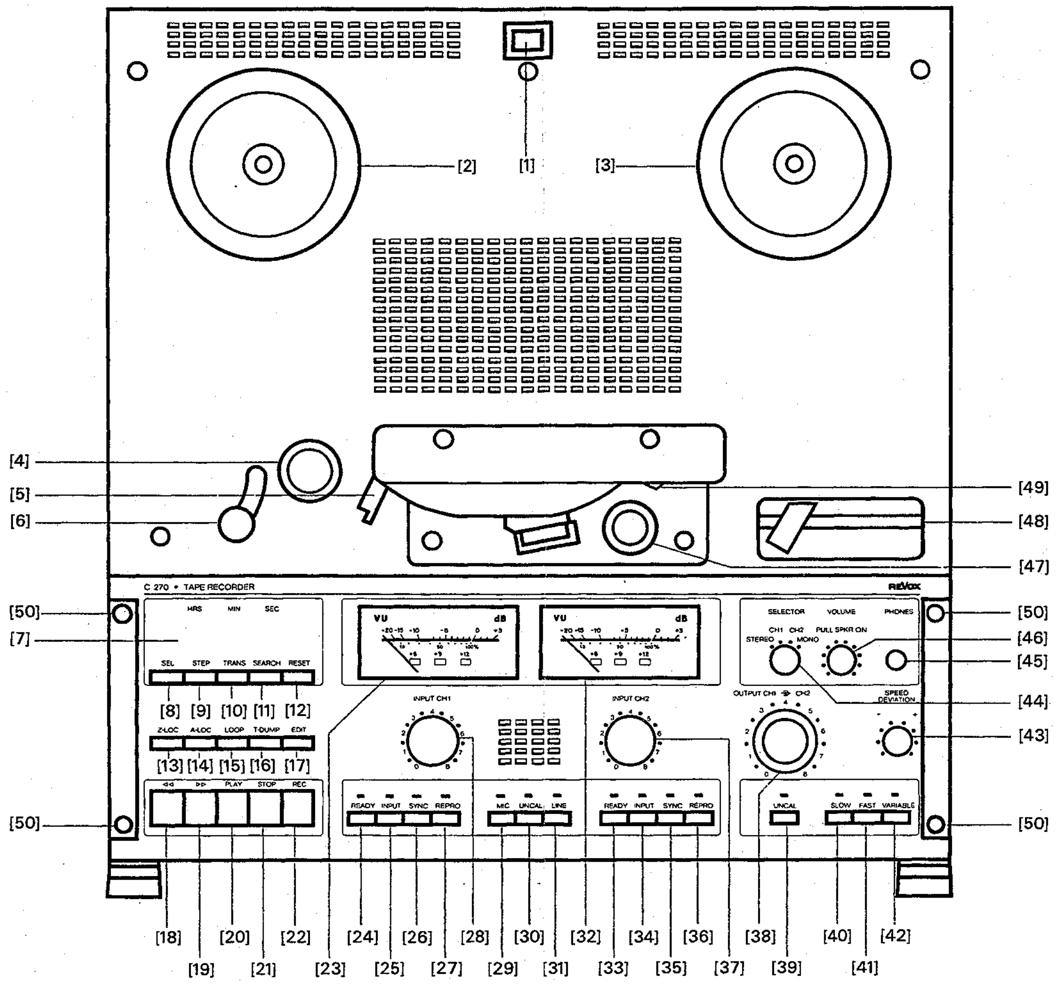
3
4
5
6
7
(RCV) Rx
+24V
Tx (SND)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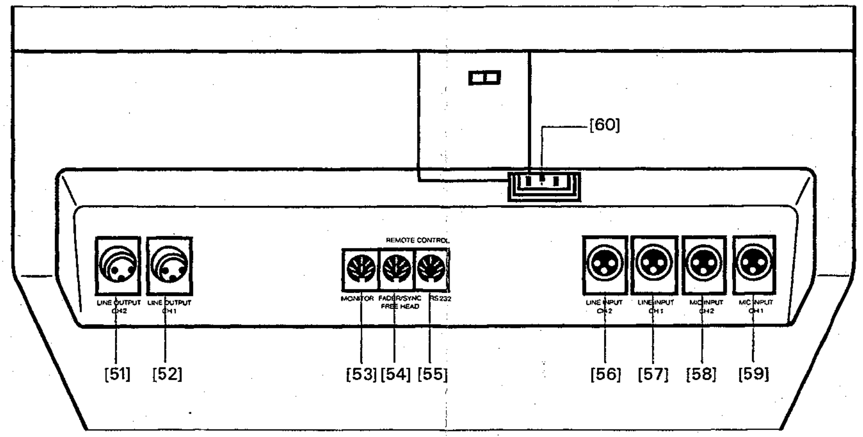
C 270 • TAPE RECORDER
REVOX


[60]
REMOTE CONTROL
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[58]
[59]

2. DISASSEMBLY INSTRUCTIONS

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2.1 GENERAL INFORMATION

Important:
Before you remove any housing elements or electronic assemblies, make sure that the tape recorder is disconnected from the AC power source!

The guidelines concerning the handling of MOS components, specified at the beginning of these service instructions, should be strictly observed.

2.1.1 Lubrication

All bearings are lubricated for life and require no maintenance. The lubrication of other gliding surfaces is limited to a minimum.

2.1.2 Required tools

1	Screwdriver	Size 1
1	Phillips screwdriver	Size 1
1	Phillips screwdriver	Size 2
1	Hexagon-socket-screw key	Size 2.0
1	Hexagon-socket-screw key	Size 2.5
1	Pair of flatnose pliers	
1	"ESE" workstation kit	Part No. 46200

Recommendation: Prepare line the workbench in such a way in order to prevent marring of the equipment surfaces.

2.1.3 Reassembly

The unit is reassembled by performing the following disassembly operations in reverse order and by following the specific reassembly instructions.

2.2 HOUSING

2.2.1 Housing cage

- Carefully set the C270 on its front panel and unfasten the 8 screws [1] of the housing cage or the two 19" rack bracket, as well as the 4 screws [2] that attach the two feet to the housing.
- Remove the housing cage evenly from the unit.

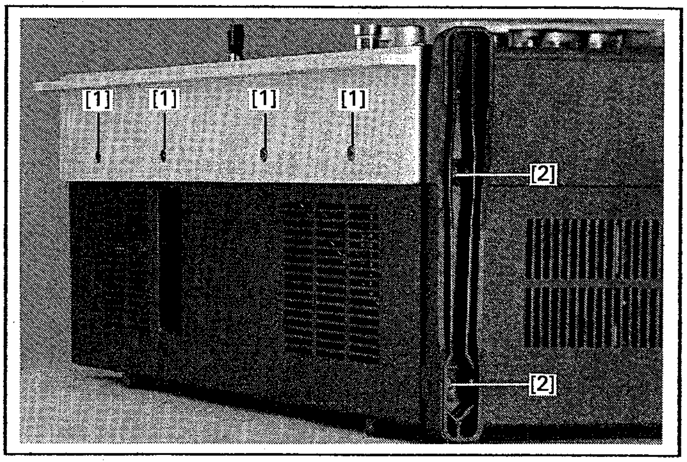


Fig. 1

Important:
The 2 feet must be reinstalled after the housing cage has been removed, to prevent the unit tilting over.

2.2.2 Tape transport cover

- Unfasten 2 screws [3] of the tape scissors and remove the latter.
- Unfasten 2 screws [4] of the headblock cover and remove the latter.
- Unfasten the screws [5] and remove the metal casting part.
- Unfasten the screws [6] and the screws [7], then lift off the tape transport cover.

Reassembly instructions:
- When you refit the cover, make sure that the hinged shield on the reproduce head is in it's upright position.

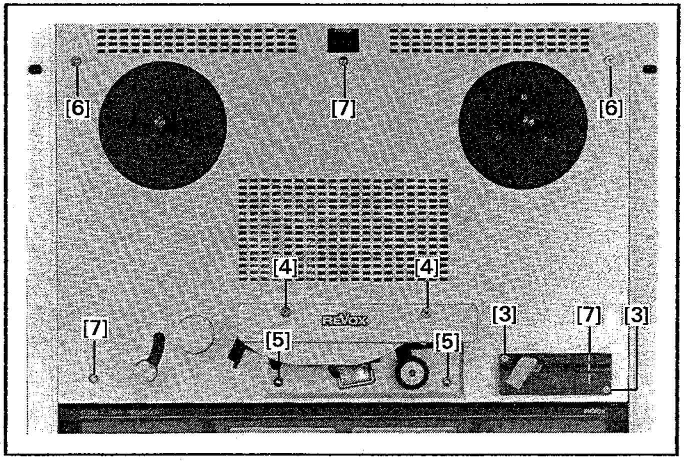


Fig. 2

2.3 CONTROL PANEL

Note:
The control panel can be lifted after the 4 screws [8] have been unfastened. When the parallel guides are pushed toward the tape recorder, the control panel locks in place as shown in Fig. 3. This provides optimum access for the service work.

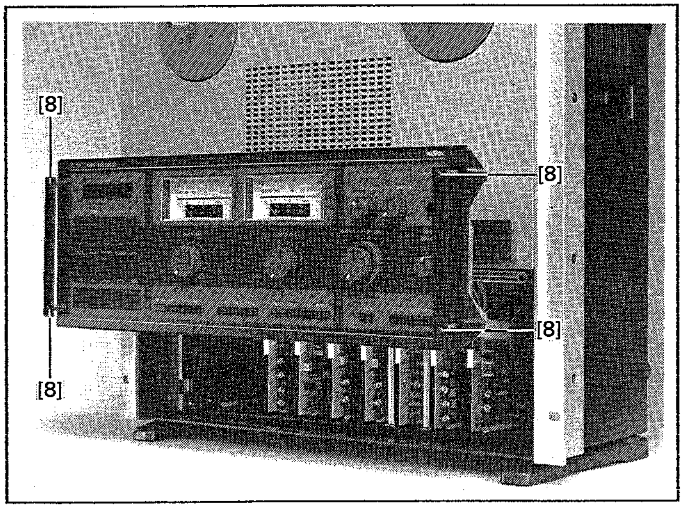


Fig. 3

- Remove the housing cage (see 2.2.1)
- Unfasten 4 screws [8] of the control panel.
- Unfasten the 17 screws [9] of the AUDIO BASE BOARD. Slide out the board by approx. 2 cm. Through the resulting gap, the coded connectors [10,11,12] can be detached from the AUDIO BASE BOARD. One additional connector each is located on the CONTROL BOARD 1.777.400 and on the CAPSTAN SERVO BOARD 1.777.410.
  The cable connection to the CAPSTAN SERVO BOARD should preferably be detached in the area of the control panel and secured with a clip when it is reattached.

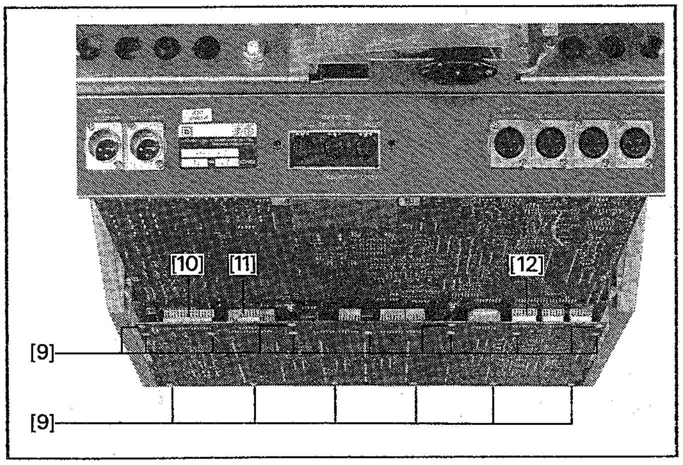


Fig. 4

- Unfasten the ground cable [13].
- Unfasten 2 screws [14] on both sides of the control panel mounting; the control panel can then be lifted out of the chassis.

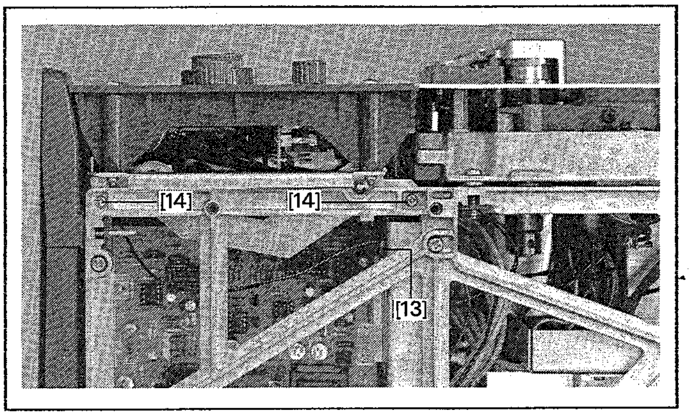


Fig. 5

- Unfasten the now visible cable clips [15], guide out the cable and remove the complete control panel.

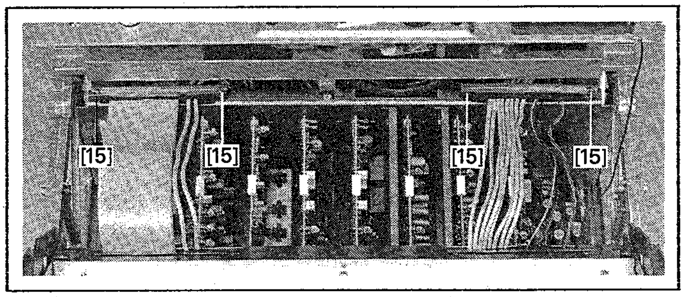


Fig. 6

2.3.1 VU-PEAK BOARD

- Remove the control panel (see 2.3).
- Unfasten 4 screws [16] on both sides of the rear panel as well as the 4 screws [17] of the two cable bushings.
- On the inside unfasten 1 screw [18] so that the 3 ground cables can be exposed.

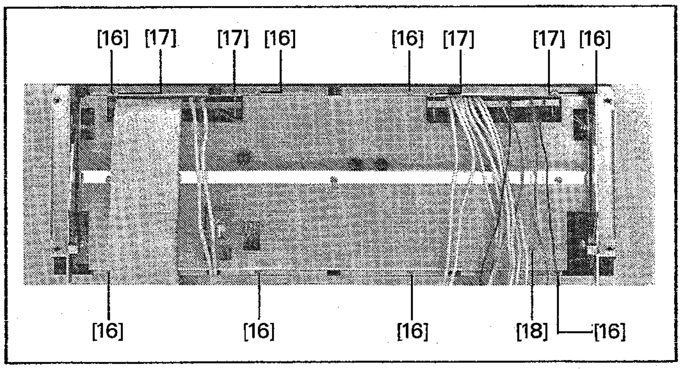


Fig. 7

- Unfasten the 4 fixing screws [19] of the VU-PEAK board 1.777.460.
- Starting on one side, bend the 5 snap fasteners [20] successively out of their locked position and simultaneously lift the VU-PEAK BOARD with restrained force.

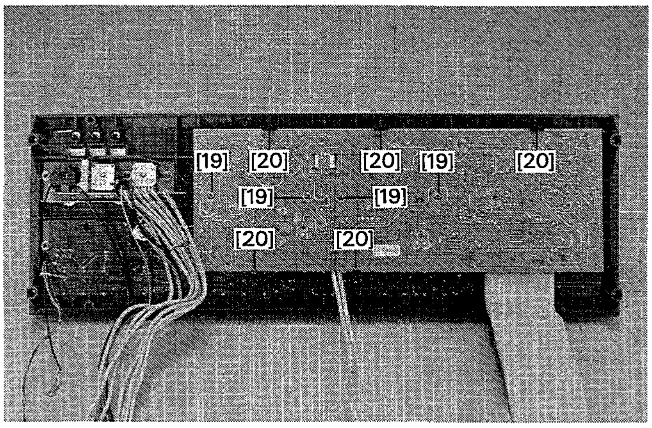


Fig. 8

2.3.2 KEYBOARD 1.777.450.00

- Remove the control panel (Section 2.3.)
- Remove the VU-PEAK BOARD (Section 2.3.1)
- Pull off all control knobs on the front panel. Important: on the "VOLUME" knob, the headless screw must be unfastened first.
- Unfasten the retaining nut of the potentiometers INPUT CH 1 INPUT CH 2, OUTPUT CH1/CH2.
- Unfasten the 2 screws [21] (Fig. 9).
- Starting on one side, bend the snap fasteners successively out of their locked position and simultaneously lift off the KEYBOARD with restrained force. The ground cable is now exposed and only clamped under the OUTPUT potentiometer.

Reassembly instruction:
- Reinstall exactly the same number of washers [21]. Otherwise the screws will penetrate the plastic housing.

Important:
The operator keys are inserted loosely into the control panel. They could drop out when the panel is turned upside down.

2.3.3 AUDIO SWITCH BOARD 1.777.462

- Remove the front panel (Section 2.3).
- Remove the VU-PEAK BOARD (Section 2.3.1).
- Remove the KEYBOARD (Section 2.3.2).
- Unfasten 4 screws [22] and detach the connecting cables from the monitor speaker.

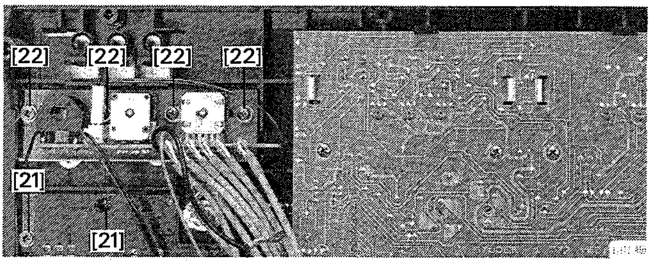


Fig. 9

Reassembly instruction:
- Reinstall exactly the same number of washers [22]. Otherwise the screws will penetrate the plastic housing.

2.3.4 LINE POTMETER,OUTPUT 1.777.825.00

- Remove the control panel (Section 2.3)
- Unfasten the 8 screws [16] (Fig. 7) on the rear cover of the control panel, remove the rear cover.
- Remove the coaxial knob of the OUTPUT CH1 CH2, unfasten the retaining nut.
- Detach the LINE POTENTIOMETER OUTPUT cable and remove it.

2.3.5 WIRE HARNESS MONITOR 1.777.820.00

- Remove the control panel (Section 2.3).
- Remove the VU-PEAK BOARD (Section 2.3.1).
- Remove the KEYBOARD (Section 2.3.2).
- Unhook the retaining bracket [23] of the WIRE HARNESS MONITOR. Remove the WIRE HARNESS MONITOR.

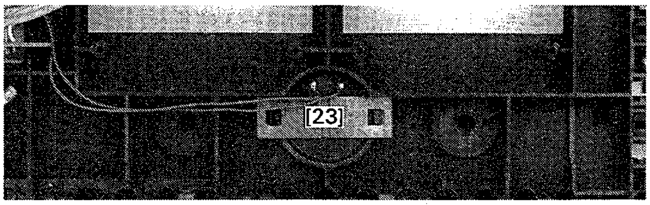


Fig. 10

2.4 ELECTRICAL ASSEMBLIES

2.4.1 CONTROL BOARD 1.777.400.22

- Remove the housing cage (Section 2.2.1)
- Unfasten 9 screws [24] of the CONTROL BOARD.

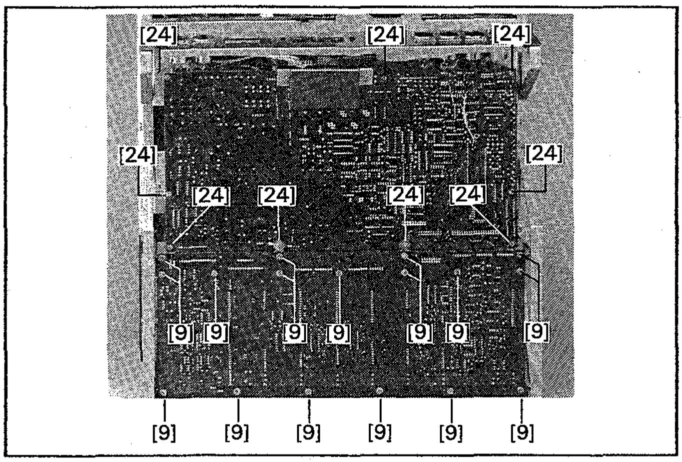


Fig. 11

- Lift off the CONTROL BOARD and simultaneously separate the 19 pluggable connections on the board.

2.4.2 AUDIO BASIS BOARD 1.777.500.81

- Remove the plug-in boards (Section 2.5).
- Remove the housing cage (Section 2.2.1).
- Unfasten 17 screws [9] on the AUDIO BASE BOARD (see Fig. 11).
- Slide out the board and simultaneously separate the 12 pluggable connections.

2.4.3 CAPSTAN SERVO BOARD 1.777.410.20

- Remove the housing cage (Section 2.2.1).
- Remove the CONTROL BOARD (Section 2.4.1).
- Unfasten 4 screws [25].

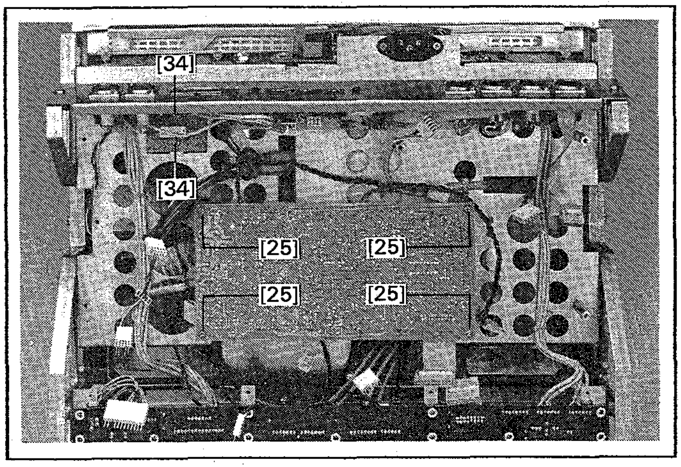


Fig. 12

- Lift off the board and simultaneously separate the 3 remaining pluggable connections (capstan motor).

2.4.4 FAST START BOARD 1.777.414.00

- Remove the housing cage (Section 2.2.1).
- Remove the CONTROL BOARD (Section 2.4.1).
- Remove the CAPSTAN SERVO BOARD (Section 2.4.3).
- The assembly located on the CAPSTAN SERVO BOARD can be removed by separating the solder and cable connections.

2.4.5 CONNECTION UNIT 1.777.830.00

- Remove the housing cage (Section 2.2.1).
- Unfasten 2 screws [26]

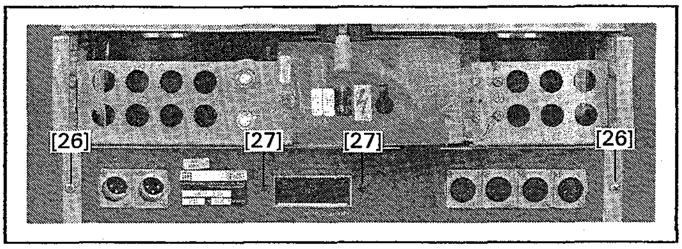


Fig. 13

- Separate 2 connectors, including cable tie, on the CONTROL BOARD.
- Separate 3 connectors, including cable tie, on the AUDIO BASE BOARD.
- Lift off the CONNECTION UNIT.

2.4.6 CONNECTION BOARD 1.777.441.00

- Remove the housing cage (Section 2.2.1)
- Lift off the CONNECTION UNIT (Section 2.4.5).
- Separate 2 connectors, including cable tie, on the CONTROL BOARD.
- Detach the monitor connector on the CONNECTION BOARD.
- Unfasten 2 screws [27] (Fig. 13) of the CONNECTION BOARD.
- Remove the CONNECTION BOARD.

2.4.7 MAINS TRANSFORMER 1.777.300.00

- Remove the housing cage (Sect. 2.2.1).
- Remove the CONTROL BOARD (Section 2.4.1).
- Remove the CAPSTAN SERVO BOARD (Section 2.4.3)
- Remove the CONNECTION UNIT (Section 2.4.5).
- Remove the transport cover (Section 2.2.2).
- Unfasten 4 screws [28] on the transport side.

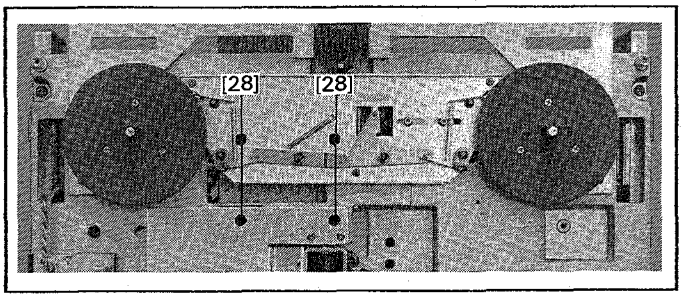


Fig. 14

- Unfasten 4 screws [29,29a] on both sides.

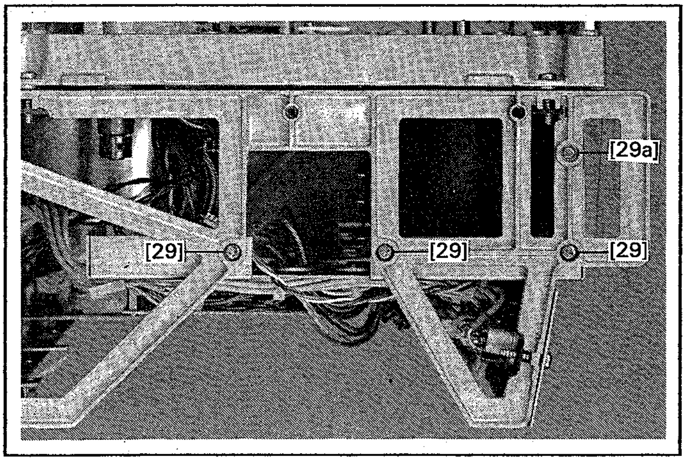


Fig. 15

- Open all cable ties on the chassis partition.
- Lightly lift the power switch and simultaneously remove the Chassis partition.
- Remove 2 screws [30] of the sheet metal cover.
- Unfasten 3 screws [31] of the DISTRIBUTOR BOARD.

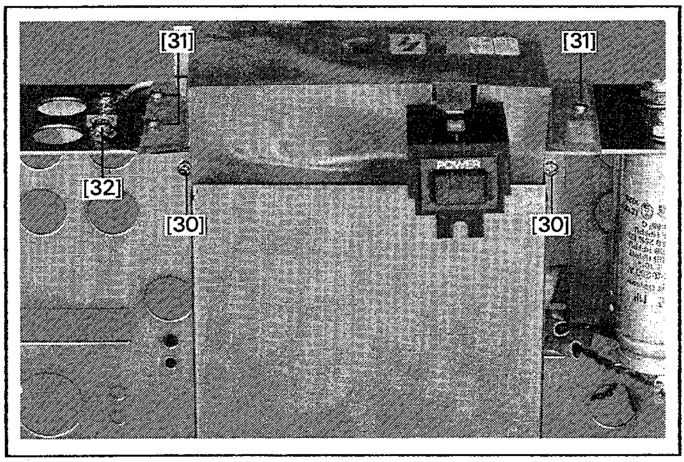


Fig. 16

- Unplug the power cord at the power inlet and disconnect the ground cable [32].
- Expose the 8 conductor cable harness.
- Detach 8 cable shoes on the DISTRIBUTOR BOARD.
- Unfasten 4 screws [33].

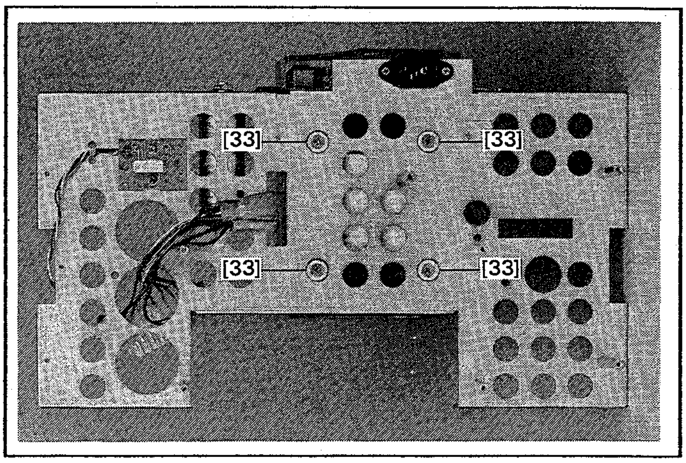


Fig. 17

- Lift out the MAINS TRANSFORMER.

Reassembly instructions:
- The 2 screws [29a] on the front are smaller than the screws [29].
- When you reinstall the chassis partition, make sure that the TACHO BOARD 1.777.250.00 is aligned with the pulse generator on the motor.

2.4.8 DISTRIBUTOR BOARD 1.777.320.00

- Remove the housing cage (Section 2.2.1).
- Unfasten the mount of the POWER switch.
- Unfasten 3 PCB fixing screws [31] (Fig. 16).
- Separate 8 cable connectors on the DISTRIBUTOR BOARD.
- Remove the DISTRIBUTOR BOARD.

2.4.9 TACHO BOARD 1.777.250.00

- Remove the housing cage (Section 2.2.1).
- Remove the CONTROL BOARD (2.4.1).
- Unfasten 2 screws [34] (Fig. 12) of the TACHO BOARD and remove the cable connector. Slide out the board.

2.4.10 TENSION ARM BOARD 1.777.211.00

- Remove the transport cover (Section 2.2.2).
- Unfasten 3 PCB fixing screws [35] (Fig. 18) and unfasten the cable connectors, then carefully slide out the TENSION ARM BOARD.

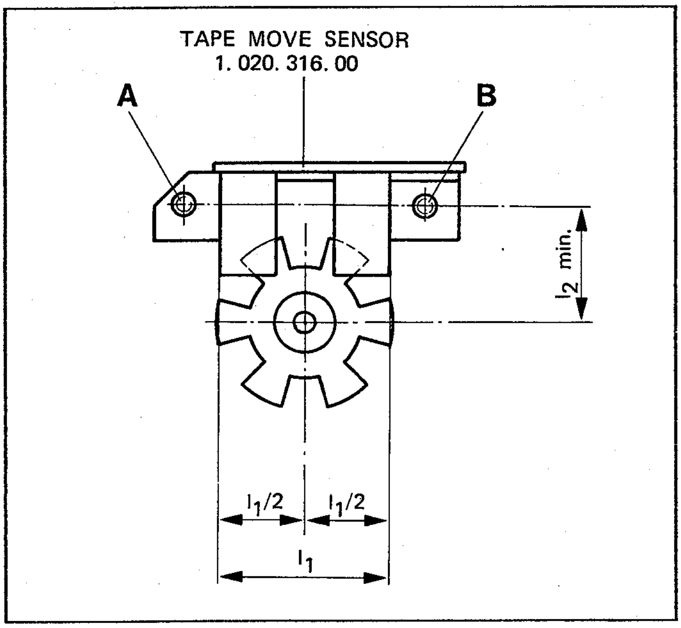
NOTE:
The machines with modified tape tension sensors are equipped with a spring bracket fixed to the chassis by two screws (1.777.210.09). The number of the two springs are 1.010.134.37 (replacing the actual spring) and the new, 1.077.100.13 .

2.4.11 TAPE MOVE SENSOR PCB 1.020.316.00

- Remove the transport cover (Section 2.2.2).
- Unfasten 1 screw [36] as well as 2 PCB/roller mount screws [37] of the TAPE MOVE SENSOR.
- Unfasten 2 screws [38] of the PCB mount as well as the cable connector.
- Slide out the TAPE MOVE SENSOR.

Reassembly instruction:

With the screws A and B, fasten the TAPE MOVE SENSOR in such a way that the conditions as per below picture are satisfied.



2.4.12 TAPE SENSOR BOARD 1.050.312.00

- Remove the transport cover (Section 2.2.2).
- Unfasten 2 fixing screws [39] as well as the cable connector of the TAPE SENSOR BOARD.
- Slide out the TAPE SENSOR BOARD.

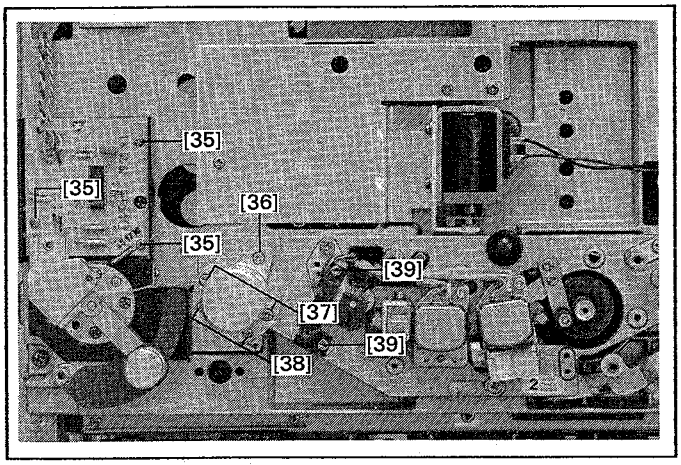
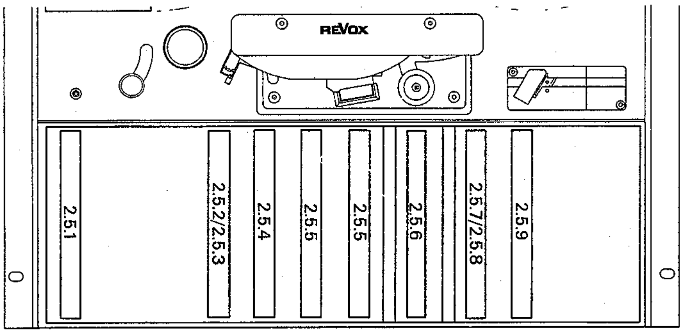


Fig. 18

2.5 PLUG-IN CIRCUIT BOARDS

- Unfasten 4 screws [8] (Fig. 3).
- Raise the hinged operating panel.
  When the parallel guides are pushed toward the tape recorder, the control panel locks in place as shown in Fig. 3. This provides optimum access for service and repair work on the plug-in boards.
- Unfasten the guard rail.
- All circuit boards listed below can now be pulled out individually.

2.5.1 MIC-LINE-SWITCH BOARD 1.777.520.00 (option)
2.5.2 RECORD EQUALIZER BOARD 1.777.540.00
2.5.3 RECORD SPEED BOARDS 1.777.550.00-.559.00
2.5.4 ERASE AMPLIFIER BOARD 1.777.560.00
2.5.5 BIAS AMPLIFIER BOARD 1.777.570.00 (2pcs)
2.5.6 PREAMPLIFIER BOARD 1.777.610.00
2.5.7 REPRODUCE AMPLIFIER BOARD 1.777.620.00
2.5.8 REPRO SPEED BOARDS 1.777.630.00-.639.00
2.5.9 OUTPUT AMPLIFIER BOARD 1.777.640.00



2.6 MECHANICAL ASSEMBLIES

2.6.1 Brake assembly

- Remove the transport cover (Section 2.2.2).
- Unfasten the reel flange, 3 screws [40] each.
- Unfasten the central screw [41] (Fig. 21) on both brake drums. Disengage the brake bands by pressing against the brake plunger and carefully lift the brake drums with the driver plate.

Caution:
Do not kink the brake bands and do not touch them with ungloved hands, otherwise the braking performance will deteriorate.

- Detach 2 cable connections from the brake solenoid [42].
- Unfasten 3 screws [43] of the brake chasis and carefully lift it off the brake assembly.

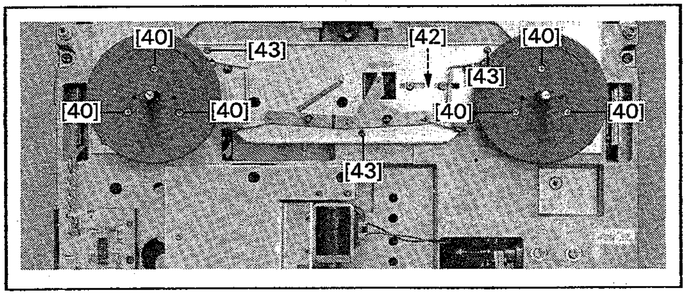


Fig. 19

2.6.2 Headblock

- Remove the housing cage (Section 2.2.1)
- Remove the transport cover (Section 2.2.2).
- Detach the cable connector of the TAPE MOVE SENSOR PCB, the TAPE SENSOR BOARD (both connectors on the CONTROL BOARD), the erase head [44], the record head [45], and the reproduce head [46] (all three connectors located on the AUDIO BASE BOARD).
- Unfasten 3 screws [47] on the headblock and lift off the headblock. Treat the now protruding capstan shaft [48] very carefully.

Reassembly instruction:
- When you reinstall the headblock, tilt the hinged shield [46] forward before you mount the headblock.

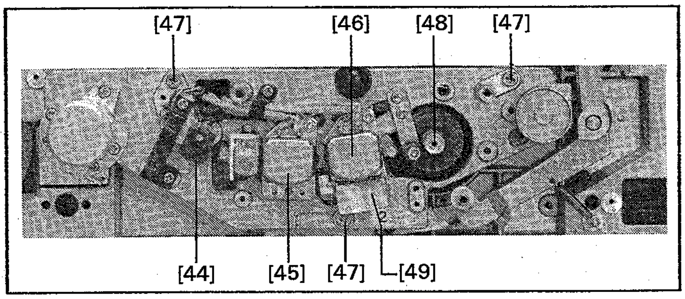


Fig. 20

2.6.3 Soundheads

- Remove the headblock (Section 2.6.2).
- The soundheads are screwed to the headblock chassis. When the headblock chassis is removed, the soundheads can be separated by unfastening the centering screw.

Note:
Should the record and the reproduce head need replacing, the machine should preferably be forwarded to the nearest REVOX service center.

2.6.4 Right-hand spooling motor

- Remove the brake assembly (Section 2.6.1).
- Remove the 4 screws [50] of the two separation plates.
- Remove the CONTROL BOARD (Section 2.4.1)
- Remove the CONNECTION UNIT (Section 2.4.5).
- Unfasten the remaining 3 connectors on the CAPSTAN SERVO BOARD.
- Unfasten all cable ties on the chassis partition.
- Unfasten 2 screws [28] on the transport cover.

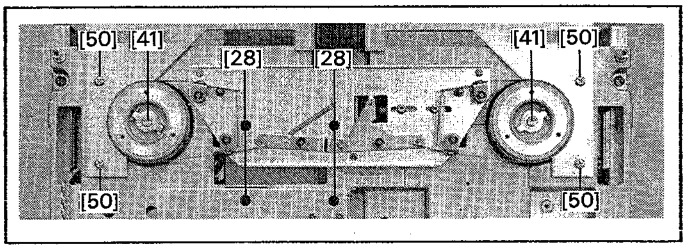


Fig. 21

- Unfasten 4 screws on both sides [29,29a] (Fig. 15).
- Lightly lift the POWER switch and simultaneously remove the chassis partition.
- Unfasten 1 screw of the motor cable holder [51] (Fig. 24).
- Unfasten 3 screws of the spooling motor flange [52] and simultaneously slide out the spooling motor while securing it with one hand.

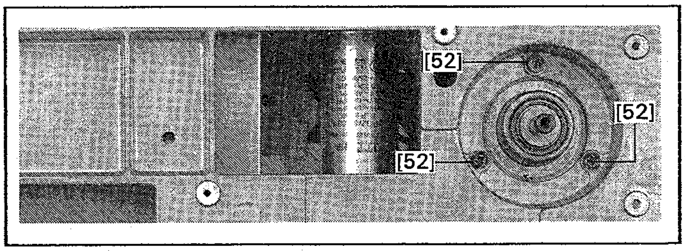


Fig. 22

Reassembly instruction:
- When you reinstall the chassis partition, make sure that the TACHO BOARD 1.777.250.00 is aligned with the tacho wheel on the motor.
- The 2 screws [29a] on the top front are smaller than the screws [29].

2.6.5 Left-hand spooling motor

- The disassembly is analogous to the right-hand spooling motor; refer to Section 2.6.4.

2.6.6 Spooling motor bearing

- Remove the spooling motors (Section 2.6.4).
- Remove the polished snap ring (B) and the snap ring (C) by means of snap ring pliers. Slide out the rotor including the shaft, downwards.

Reassembly instructions:

- The height of the brake roller (reel flange) is adjusted with the shims (D).
- Make sure that the shims (D) are put back on the same spooling motor shaft.
- The removed snap ring (B) should be replaced.
- The ball bearings of the spooling motors must only be replaced with original parts.

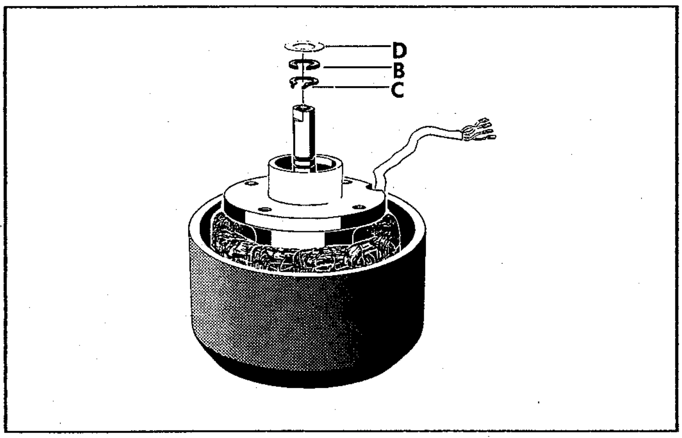


Fig. 23

2.6.7 Capstan motor

- Remove the housing cage (Section 2.2.1).
- Remove the transport cover (Section 2.2.2).
- Remove the headblock (Section 2.6.2).
- Remove the CONTROL BOARD (Section 2.4.1).
- Unfasten 3 screws of the capstan motor flange [53] (Fig. 25), and simultaneously slide out the capstan motor while securing it with one hand.

2.6.8 Pinch roller solenoid, pinch roller arm

- Remove the housing cage (Section 2.2.1).
- Remove the transport cover (Section 2.2.2).
- Unfasten 3 screws [47] (Fig. 20) of the headblock.
- Expose the cable [54] of the pinch roller solenoid.
- Unfasten 2 screws [55] (Fig. 25) of the pinch roller mount and slide out the relay.

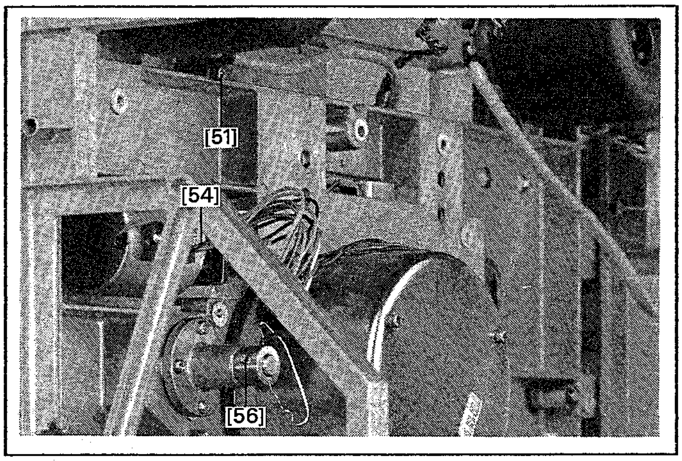


Fig. 24

- Unfasten the headless screw [56] on the pinch roller shaft.
- Slide out the pinch roller arm

Reassembly instruction:

- The axial play of the shaft should be 0.4 to 1.0 mm.

2.6.9 Tape lifter

- Remove the housing cage (Section 2.2.1).
- Remove the transport cover (Section 2.2.2).
- Remove the headblock (Section 2.6.2).
- Unfasten 3 screws [57] of the tape lifter.

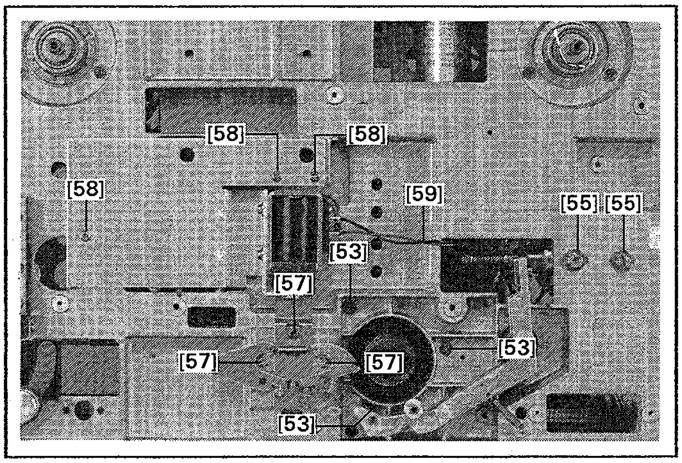


Fig. 25

- Unfasten 3 screws [58] of the solenoid mount, including the connecting cable [59] to the magnet. The complete tape lifter can now be removed.

3. FUNCTIONAL DESCRIPTION

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3.3.12 OUTPUT AMPLIFIER BOARD 3/12
3.3.13 AUDIO SWITCH BOARD 3/13
3.3.14 VU-PEAK BOARD 3/13

3.1 OVERVIEW

The C270 tape recorder can be functionally broken down into a tape deck block and an audio block.

The tape deck block comprises the following sub-assemblies:

- Power supply
- Microprocessor
- Microprocessor interface
- Sensors
- Capstan control, spooling motor control
- Keyboard and external interfaces

The audio block comprises the following subassemblies:

- Microphone amplifier (option)
- Line input amplifier
- Record amplifier
- Erase amplifier and bias amplifier
- Preamplifier and sync amplifier
- Reproduce amplifier and output amplifier
- VU-meter and PEAK indicator

3.2 FUNCTIONAL DESCRIPTION, TAPE DRIVE

3.2.1 DISTRIBUTOR BOARD 1.777.320.00

The power inlet is connected directly to the DISTRIBUTOR BOARD. The input voltage is taken via the single-pole switch (S1), the primary fuse (F1) as well as the band-pass filter (L1, C1, C2) to the line voltage selector (S2).

The output of the voltage selector is taken via the AMP connector and stranded wires to the primary side of the power transformer.

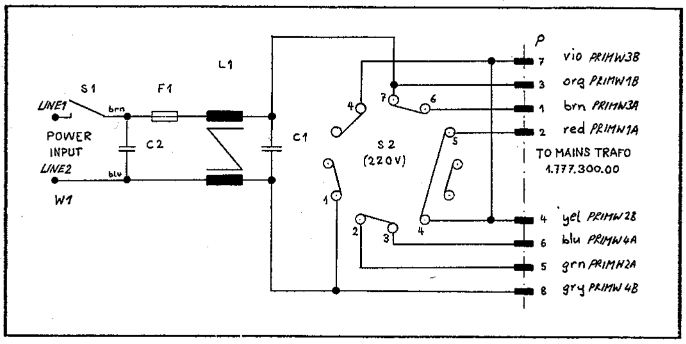


Fig. 1

3.2.2 CONTROL BOARD 1.777.400.22

Supply

The secondary side of the power transformer is connected by means of stranded wires and multipin connector (J15) to the CONTROL BOARD. It supplies the following input voltages:

- +15 VDC with rectifier (DZ3) and voltage regulator (IC23), for audio and control
- −15 VDC with rectifier (DZ4) and voltage regulator (IC24) for audio and control
- +36 VDC with rectifier (DZ6), unstabilized, for the capstan motor
- +24 VDC with rectifier (DZ5), unstabilized, for the solenoids, the monitor output, and the serial RS232 interface.
- +5 VDC with switching power supply (IC25) from which +24 VDC are generated for the logic and the instrument illumination.
- 125 VAC for the spooling motors

All secondary voltages are protected on the secondary side with fine-wire fuses.

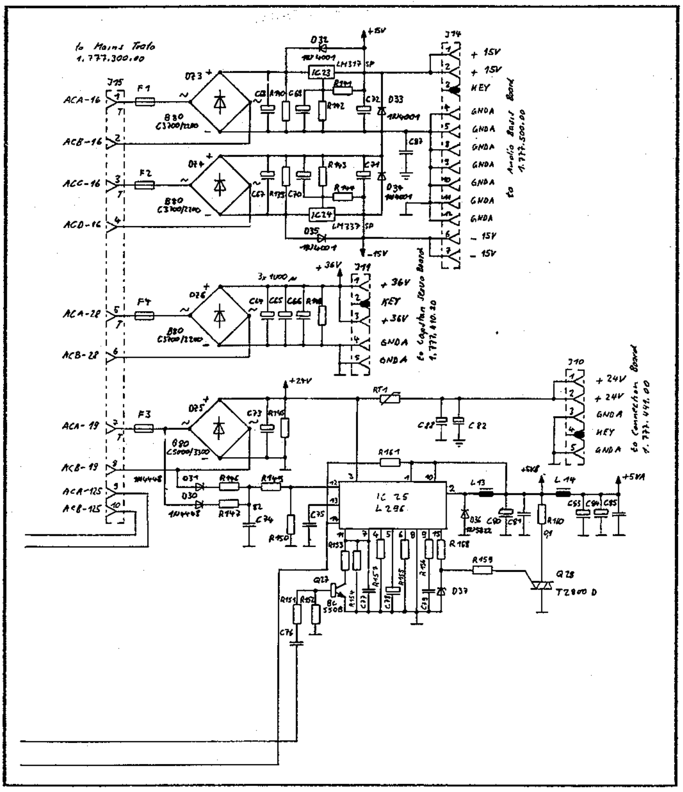

to Mains Trafo 1.777.300.00
J15
ACA-16
ACB-16
ACC-16
ACD-16
ACA-28
ACB-28
ACA-19
ACB-19
ACA-125
ACB-125
F1
F2
F3
F4
B80 C3700/2200
B80 C5000/3300
IC23 LM317 SP
IC24 LM337 SP
+15V
-15V
+36V
+24V
+5VA
J14
KEY
GNDA
to Audio Basic Board 1.777.500.00
J11
to Capstan Servo Board 1.777.410.20
J10
to Connection Board 1.777.441.00
IC 25 L 296
Q28 TZ800 D
Q27 BC 550B

Fig. 2

Processor system

The processor system comprises the OPROM processor 637A01Y (IC6) with internal 16 K EPROM and 192 byte RAM. The processor clock is 1.2288 MHz. The following frequencies are derived from this clock by means of a divider chain (IC7):

- 153.6 kHz erase and bias frequency
- 76.8 kHz for the +5 V switching power supply and the pulse width modulation for the spooling motors.
- 38.4 kHz for the pulse width modulation of the capstan motor control and the modulation frequency for the tape sensor.
- 9600 Hz as the capstan tacho reference.

Operation parameters

The following operation parameters can be programmed on the 8-bit DIP switch (SZ1):

S2 ON = Auto-Rewind activated, programmable with loop key, loop function disabled
S2 OFF = Normal loop function

S3 ON = Library wind activated, adjustable with potentiometer (RA4)
S3 OFF = No library wind

S4 ON / S5 ON = 3 3/4 ips and 7 1/2 ips tape speed
S4 ON / S5 OFF = 3 3/4 ips and 15 ips tape speed
S4 OFF / S5 ON = 7 1/2 ips and 15 ips tape speed
S4 OFF / S5 OFF= 3 3/4 ips and 7 1/2 ips tape speed

S6 ON = Mic-Option installed
S6 OFF = Mic-Option not installed

S7 ON = Standard machine
S7 OFF = Playback-only machine

S1 ON / S8 ON = Machine in standard mode
S1 ON / S8 OFF = Fader enabled

S1 OFF / S8 ON = ext. sync active

Interfaces

The CONTROL BOARD is equipped with the following interfaces in order to support data communication:

- The **RS 232** (serial input and output) is operated at 9600 baud. Signal path input (RCV): transistor (Q5), connector (P2), flat cable, CONNECTION BOARD. Signal path output (SND): IC1, connector (P2), flat cable, CONNECTION BOARD.
- **Fader start input**
  Signal path (FADER): optocoupler (DLQ1), connector (P2), flat cable, CONNECTION BOARD.
- **Tacho input**
  Signal path (TACHO): Socket (J4), stranded wire, TACHO BOARD.
- **Tacho roller input**
  Signal path (MOVE C): socket (J12), stranded wired, TAPE MOVE SENSOR.
- **Tape sensor input**
  Signal path: Socket (J5), stranded wire, TAPE SENSOR BOARD.
- **Tension sensor arm input and output**
  Signal path (ATENS): Socket (J13), stranded wire, TENSION ARM BOARD.
- **Input and output to the control panel section**
  Signal path (KBD): Connector (P4), flat cable, VU PEAK BOARD, KEYBOARD.
- **Control output to audio block**
  Signal path: Connector (P1), flat cable, AUDIO BASE BOARD.
- **Control output to capstan motor control**
  Signal path (S CAP): connector (P3), flat cable, CAPSTAN SERVO BOARD.

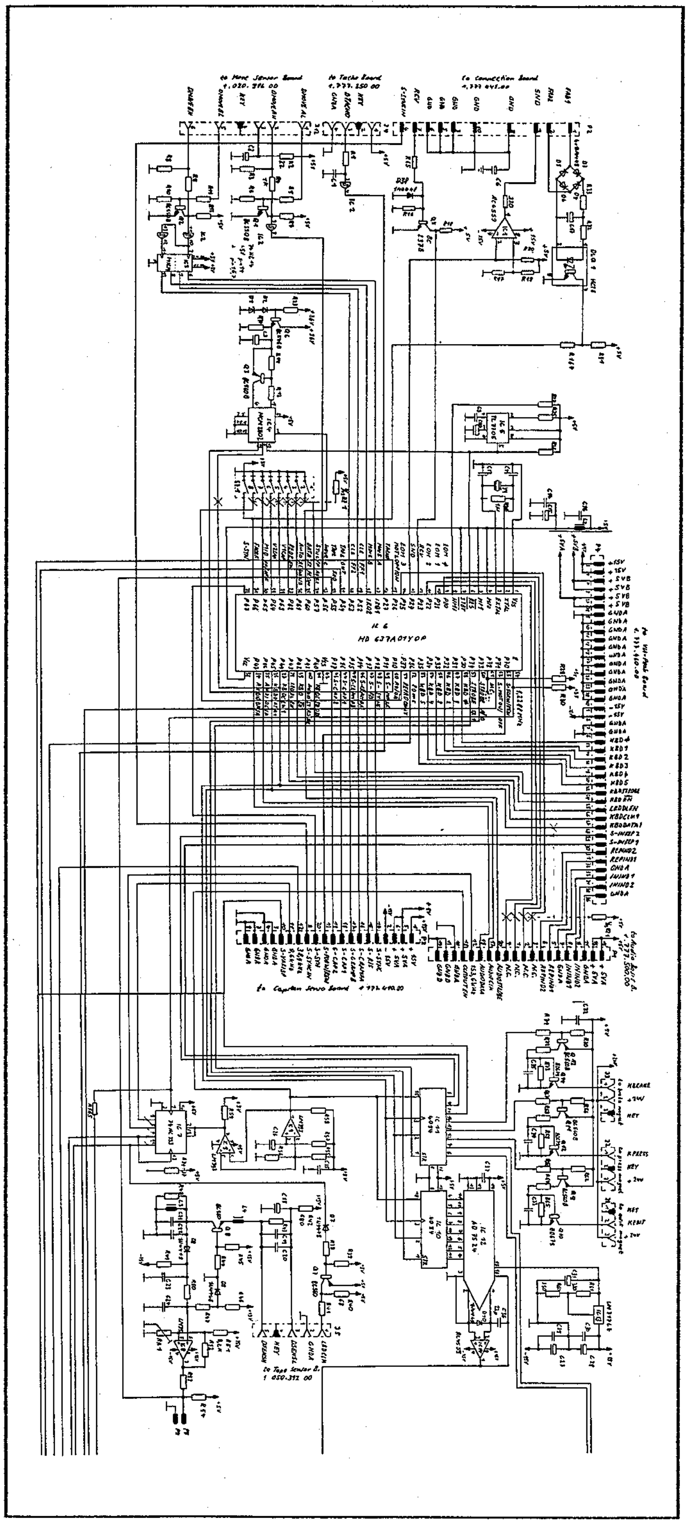


Fig. 3

Brake, pinch roller, and editing solenoid control:

The control command for the solenoids are transmitted by the processor (IC 6) via the serial bus to the shift register (IC 11) which controls the drivers (Q9/Q10, Q11/Q12). The connection to the solenoids is established by means of stranded wires on the sockets (J1, J2 and J3).

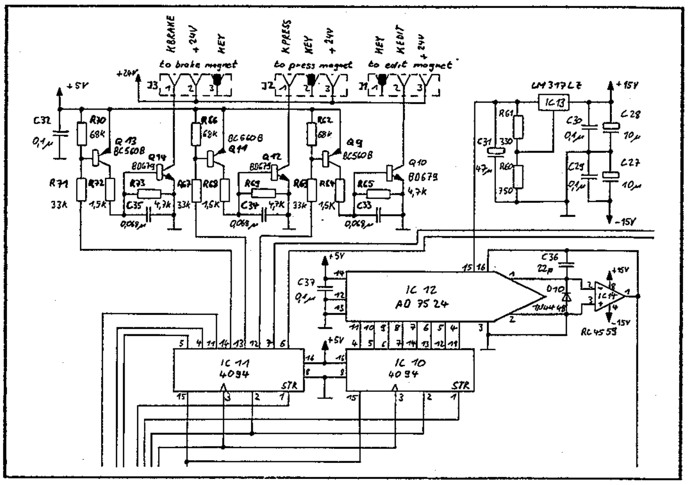


Fig. 4

Spooling motor control:

The spooling motors are controlled variously, depending on the operating mode. The processor determines the applicable version and activates it via the selector switch (IC16).

- The computer calculates the correct tape tension based on the tape speed and the speed of the right-hand pancake for the pick up motor. Signal path: Processor IC6 (Fig. 3), serial bus (KBDDATA1), shift register IC10 (Fig. 3), D/A converter IC12 (Fig. 3).
- The dragged motor is always controlled with the tape tension sensor signal (ATENS(J13).

The spooling motors, two phase-shift asynchronous motors, are operated with the mains frequency (125 VAC). The voltage amplitude is controlled by pulse width modulation with 76 kHz. The control amplifiers are implemented by IC19, the pulse width modulation by IC15 and Q19/Q20 for the saw tooth, and IC 20 for the modulators.

The motor output stage is implemented with the following components: prestage (IC21 and IC22), decoupling transformer (T1 and T2), rectifier (DZ1 and DZ2), switch (Q25 and Q26). The transistors (Q21 to Q24) and the diodes (D26 to D29) control the commutation.

The phase shift capacitors are connected via the stranded wires to the CIS sockets (J7) and (J9), the two motors via the CIS sockets (J6) and (J8).

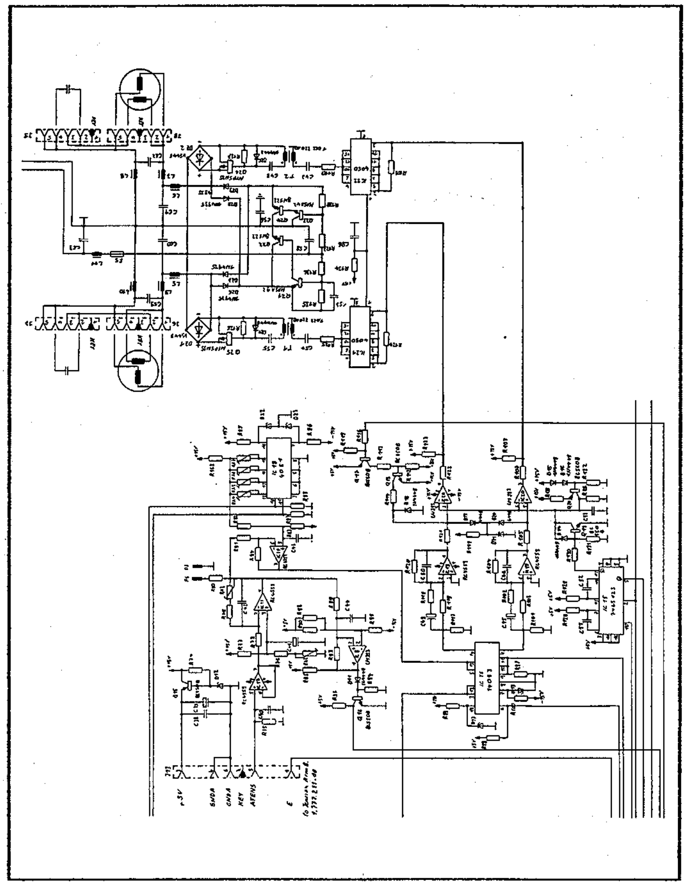


Fig. 5

3.2.3 TENSION ARM BOARD 1.777.211.00

The 1.2288 MHz square-wave signal from the CONTROL BOARD is amplified in IC1 and fed to the parallel resonant circuit (L1, C3, C4). The voltage of this resonant circuit changes, depending on the angular deflection of the sensor arm. the voltage is rectified, filtered, and fed via P5 (ATENS) to the range adjustment circuit IC17 (Fig. 5) on the CONTROL BOARD. This range adjustment voltage compensates the mechanical tolerance with the aid of the trimmer potentiometers (RA2, RA3).

The resulting control signal is taken to the tape tension circuit IC14, IC18 (Fig. 5).

The following tape tensions can now be set:

- (Pot. RA4) for tape tension in edit mode
- (Pot. RA5) for tape tension in play mode
- (Pot. RA6) for tape tension in fast rewind mode
- (Pot. RA7) for tape tension in fast forward mode

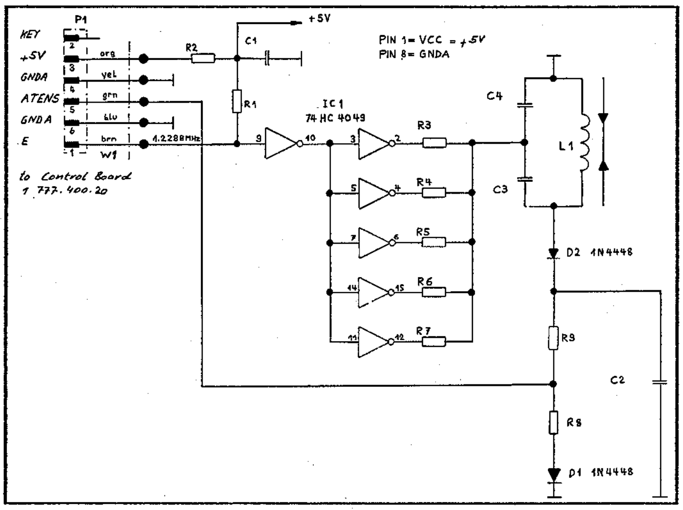

P1
+5V
KEY
+5V
GNDA
ATENS
GNDA
E
org
yel
grn
blu
brn
W1
4.2288MHz
to Control Board 1.777.400.20
R2
C1
R1
PIN 1 = VCC = +5V
PIN 8 = GNDA
IC1
74 HC 4049
R3
R4
R5
R6
R7
C4
C3
L1
D2 1N4448
R9
C2
R8
D1 1N4448

Fig. 6

3.2.4 TAPE MOVE SENSOR 1.020.316.00

The tacho roller which features 5 indexed segments, is scanned by two optocouplers (DLQ1, QLQ2). The scanned signals are taken via connector (J12) of the evaluation circuit to the CONTROL BOARD (Fig. 3). The processor can determine the speed and the tape move direction by means of the evaluation circuit (IC2, IC3, and Q1, Q2).

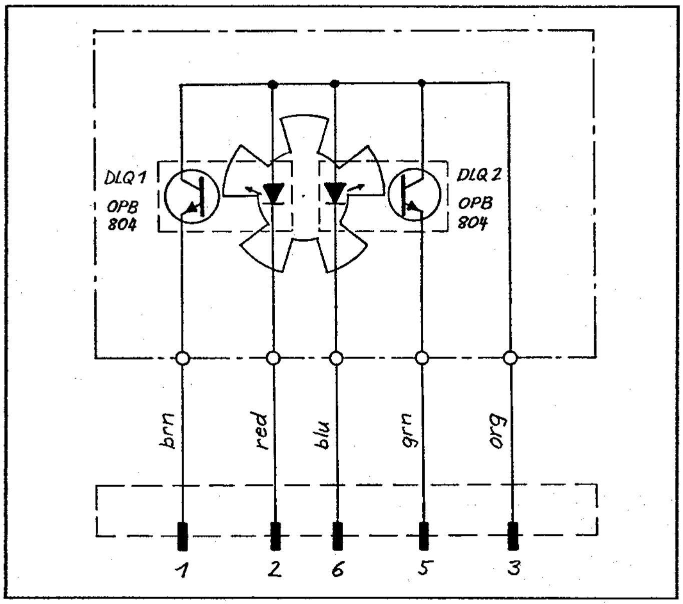

DLQ 1
OPB
804
DLQ 2
OPB
804
brn
red
blu
grn
org
1
2
6
5
3

Fig. 7

3.2.5 TAPE SENSOR BOARD 1.050.312.00

On the TAPE SENSOR BOARD there is an IR transmit diode (DL1) that is modulated with 38.4 kHz; as well as an IR receive transistor (QL1) which, depending on the tape type (normal or marking tape), supplies current to the parallel resonant circuit (L4, C19, C20) on the CONTROL BOARD (Fig. 3). The filter signal is rectified and taken to the comparator (IC8). The evaluated signal is input to the processor (IC6, pin 22).

The switching threshold can be adjusted with the potentiometer (RA1).

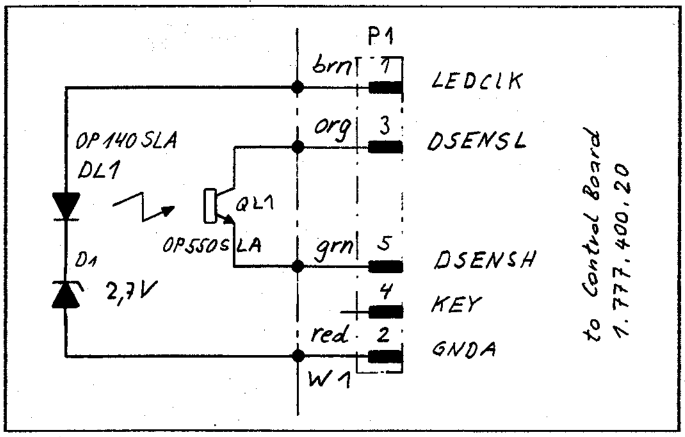

P1
brn
7
LEDCLK
org
3
DSENSL
OP140SLA
DL1
QL1
OP550SLA
grn
5
DSENSH
D1
2,7V
4
KEY
red
2
GNDA
W1
to Control Board 1.777.400.20

Fig. 8

3.2.6 TACHO BOARD 1.777.250.00

The TACHO BOARD scans the tacho wheel, 64 teeth, of the right-hand spooling motor (DLQ1, Q1). The resulting signal (DTACHO) is conditioned on the CONTROL BOARD (Schmitt trigger, IC2), and input to the processor. From this signal the processor can determine the speed of the spooling motor.

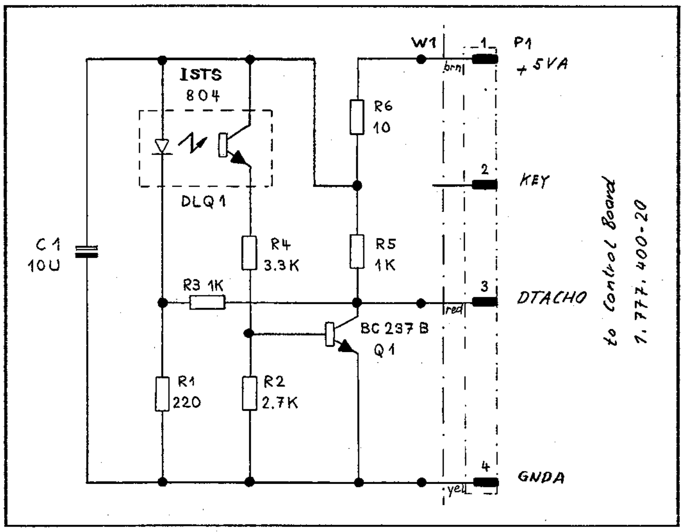

W1
1
P1
brn
+5VA
ISTS 804
DLQ1
R6 10
2
KEY
C1 10U
R4 3.3K
R5 1K
R3 1K
3
red
DTACHO
BC 237 B Q1
R1 220
R2 2.7K
4
yel
GNDA
to Control Board 1.777.400-20

Fig. 9

3.2.7 CAPSTAN SERVO BOARD 1.777.410.20

The capstan servo circuit keeps the capstan motor at a constant speed which results in a constant and low-wobble tape speed. The following connections lead off the CONTROL BOARD:

- +36 VDC supply on the connector
- +/- 15 VDC and +5 VDC reference clock signal 9.6 kHz TTL, external reference clock signal (S-SYNCIN), two-bit error signals for the frequency reference changeover (S-VARISPED, S-SYNC) and two-bit command signals for the tape speed changeover (S-CAP1, S-CAP2), all on the flat cable (W1).

The nominal reference frequency is 9.6 kHz. It can be defined either by the processor quartz or by the varispeed oscillator (IC1, IC3). The changeover to the corresponding mode is performed in IC5.

This signal is divided by 16 in IC6 and taken via a frequency-voltage converter to the summing network (IC2, IC12).

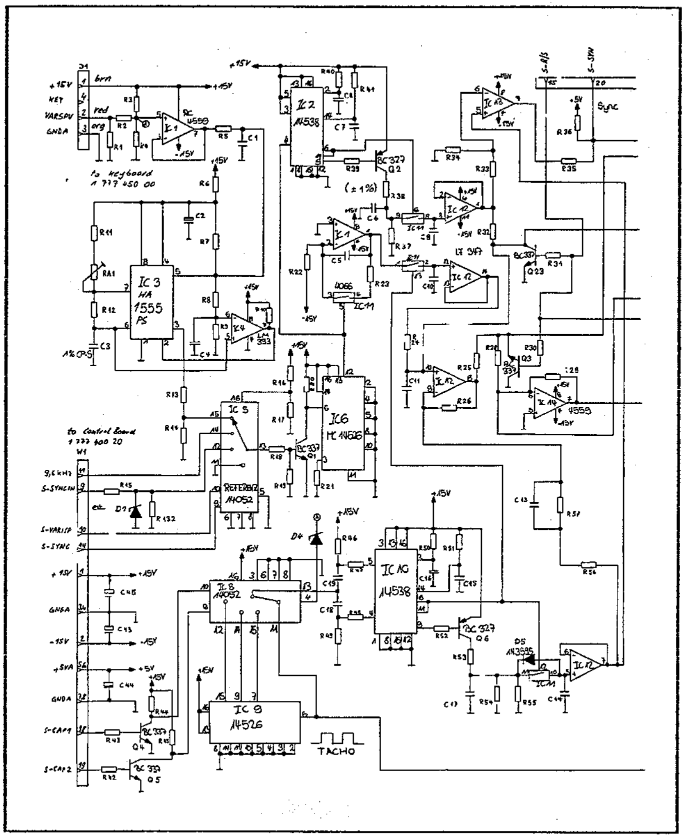

IC1 4559
IC2 14538
IC3 NA 1555 PS
IC5
IC6 MC14536
IC8 14052
IC9 14526
IC10 14538
IC11
IC12
BC327 Q2
BC327 Q6
Q3
Q4
Q5
LM 393
4559
RA1
to Keyboard 1.777.450.00
to Control Board 1.777.400.20
W1
S-SYNCIN
S-VARISP
S-SYNC
S-CAP1
S-CAP2
GNDA
+15V
-15V
+5VA
TACHO
Sync

Fig. 10

The tacho signal (ATACHOA) of the capstan motor is first FM demodulated (IC17, IC18, IC19, Q22) and, depending on the selected tape speed (IC8, IC9, Q4, Q5), taken to a frequency voltage converter (IC10, IC12). The resulting voltage is also taken to the aforementioned summing network (IC2, IC12), but with inverted polarity.

In parallel to these circuits there is a PLL circuit which compares the incoming tacho signal phase with the reference phase and supplies also the summing network input (IC1, IC11, IC12). The resulting summator signal is amplified and taken to the pulse width modulator. The pulse width modulator controls the DC-DC converter which supplies the correct supply voltage for the motor inverter stage (IC13, IC14, Q7, Q9).

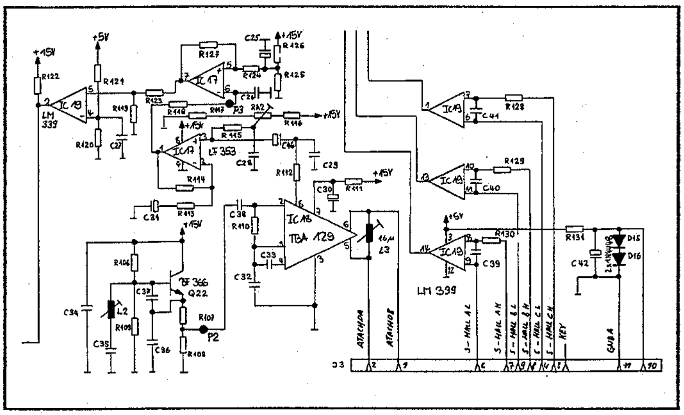

+15V
+5V
R122
R121
IC19
LM 339
R120
C27
R119
R123
R125
C25
+15V
R126
IC17
R124
R118
R117
P3
R142
C24
R116
+15V
IC17
LF 353
R115
R114
C26
C46
C29
R112
R113
C31
C30
R111
+15V
C38
R110
IC16
TBA 129
46µ
L3
C33
C32
R106
C37
BF 366
Q22
L2
R105
C34
C35
C36
R107
R108
P2
IC18
C44
R128
R129
C40
R130
C39
R131
C42
D15
D16
LM 339
ATACHO A
ATACHO B
J3
J-HALL A L
S-HALL A H
S-HALL B L
S-HALL B H
S-HALL C L
S-HALL C H
KEY
GND A

Fig. 11

The motor inverter stage comprises:

- Hall element: reports the position of the rotor (IC19, Fig. 11), via connector pin (J3).
- Logical control, decides on whether the switches should be opened or closed (IC16, Q13 to Q21). The switch transistors conduct the current on the right pass through the windings, sockets, (J2). Potentiometer RA1 adjusts the varispeed range, potentiometer RA2 adjusts the tacho symmetry.

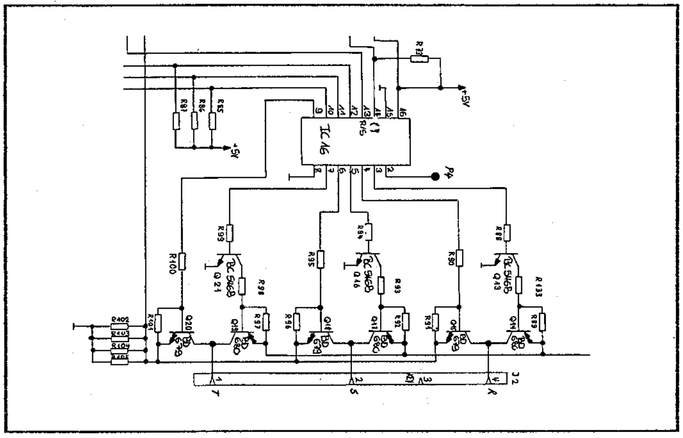

IC16
+5V
+5V
P4
Q21
Q16
Q13
J2

Fig. 12

3.2.8 CONNECTION BOARD 1.777.441.00

The following interfaces are located on the CONNECTION BOARD:

- 7-pin DIN (J2) RS 232 serial interface
- 8-pin DIN (J1) monitor output
- 8-pin DIN (J5) fader or sync, adjustable with switches S11 through S14:

- S11/S12 OFF and S13/S14 ON: Sync active
- S11/S12 ON and S13/S14 OFF: fader start active

- Free head connection

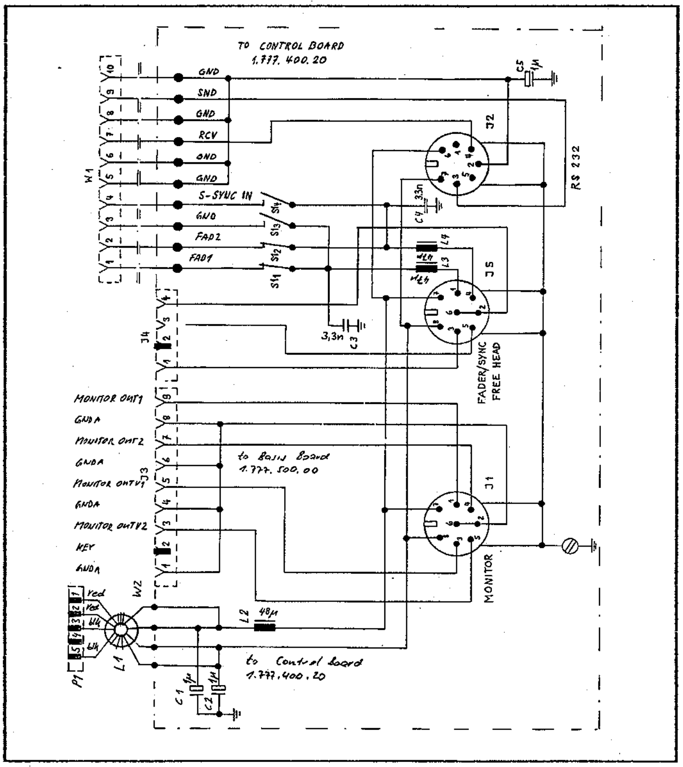
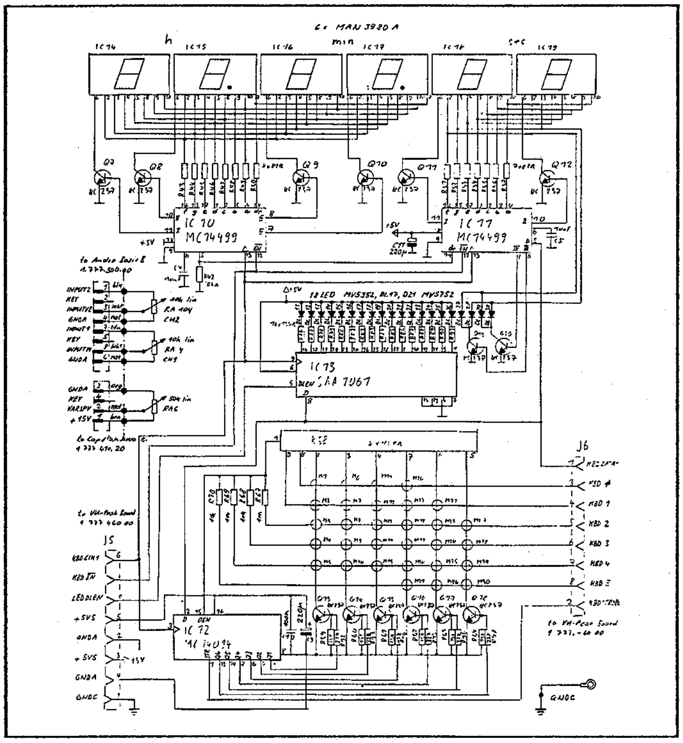

TO CONTROL BOARD
1.777.400.20
GND
SND
GND
RCV
GND
GND
S-SYNC IN
GND
FAD2
FAD1
W1
S14
S13
S12
S11
C5
J2
RS 232
C4 33n
L4
L3
J5
3,3n
C3
J4
FADER/SYNC
FREE HEAD
MONITOR OUT1
GND A
MONITOR OUT2
GND A
MONITOR OUT1
GND A
MONITOR OUT2
KEY
GND A
J3
to Basis Board
1.777.500.00
J1
MONITOR
W2
Red
Yel
Wh
Wh
P1
L1
L2 48µ
to Control Board
1.777.400.20
C1
C2

Fig. 13

3.2.9 KEYBOARD 1.777.450.00

The keyboard module comprises the 7-segment display and the keyboard scanning with acknowledgment. The 7-segment drivers (IC10, IC11) are controlled by a serial bus (KBDATA1). The drivers control the 6-LED 7-segment displays (IC14 to IC19, Q7 to Q12). The keyboard scanning is implemented with a 6 x 6 matrix circuit which communicates by means of the serial bus (Q13 to Q18) and shift register (IC12), and by means of a parallel bus with the processor on the CONTROL BOARD.
For the LED display, the shift register (IC13) controlled by the serial bus (KBDATA1) is available.



IC14
IC15
IC16
IC17
IC18
IC19
h
min
Q7
Q8
Q9
Q10
Q11
Q12
IC10
MC14499
IC11
MC14499
+5V
IC13
J6
J5
IC12
GNDC

Fig. 14

3.3 FUNCTIONAL DESCRIPTION, AUDIO

3.3.1 AUDIO BASE BOARD 1.777.500.81

The AUDIO BASE BOARD establishes the following connections:

- +/- 15 V supply connection with stranded wires (P1) from the CONTROL BOARD.
- + 5 V and digital control input from the CONTROL BOARD
- Line 1 and line 2 input with cables (J15) from the connector panel.
- Mic 1 and 2 input with cable (J14) from the connector panel.
- Uncal input 1 and 2 potentiometer input with cable from the KEYBOARD on the control panel.
- Uncal output 1 and 2 potentiometer input with cable from the control panel.
- Line 1 and 2 and monitor output with cable to the connector panel and the CONNECTION BOARD.
- Phones output with cable to the switch board in the control panel.
- Erase output 1 and 2 with stranded wires to the headblock.
- Record output 1 and 2 with cable to the head-block.
- Reproduce input 1 and 2 with cable to the headblock.
- Socket connections to the audio boards, refer to the following description.

The serial audio bus that connects the processor to the audio electronics, controls three serially connected shift registers (IC1/IC2/IC3). The outputs of these chips control the execution by means of the corresponding audio modules, depending on the functions to be performed.

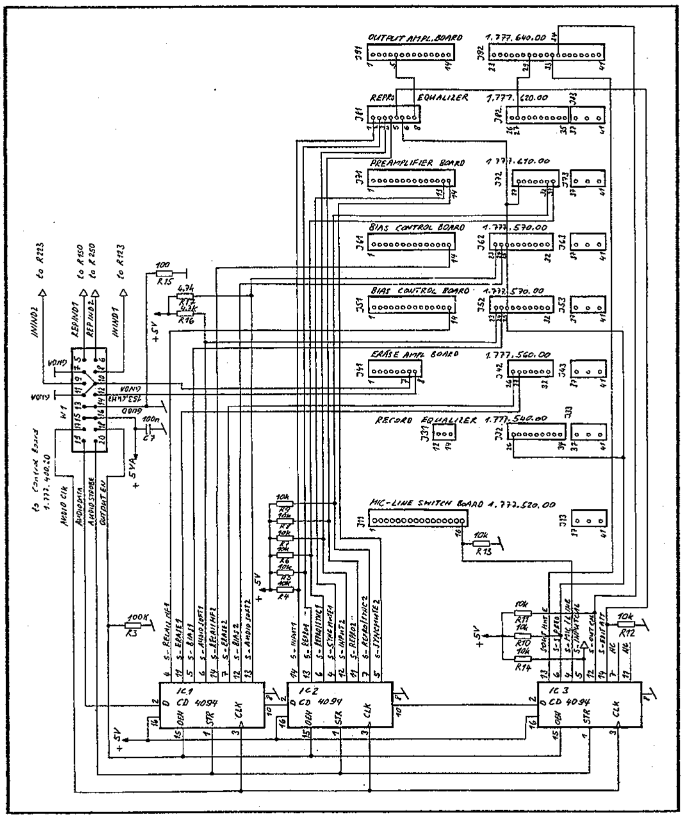

OUTPUT AMPL. BOARD 1.777.640.00
REPRO EQUALIZER 1.777.620.00
PREAMPLIFIER BOARD 1.777.670.00
BIAS CONTROL BOARD 1.777.570.00
BIAS CONTROL BOARD 1.777.570.00
ERASE AMPL BOARD 1.777.560.00
RECORD EQUALIZER 1.777.540.00
MIC-LINE SWITCH BOARD 1.777.520.00
IC1 CD 4094
IC2 CD 4094
IC3 CD 4094

Fig. 15

The balanced input amplifiers (T101/IC101 channel 1, T201/IC201 channel 2) supply the input cal-uncal amplifiers (IC102/IC103 channel 1, IC202/IC203 channel 2). The CAL or UNCAL range can be adjusted with the potentiometers (RA109/RA113 channel 1, RA209/RA213 channel 2). The outputs of these stages are input to the RECORD EQUALIZER BOARD, the REPRODUCE EQUALIZER BOARD, and via (W1) to the VU-PEAK BOARD.

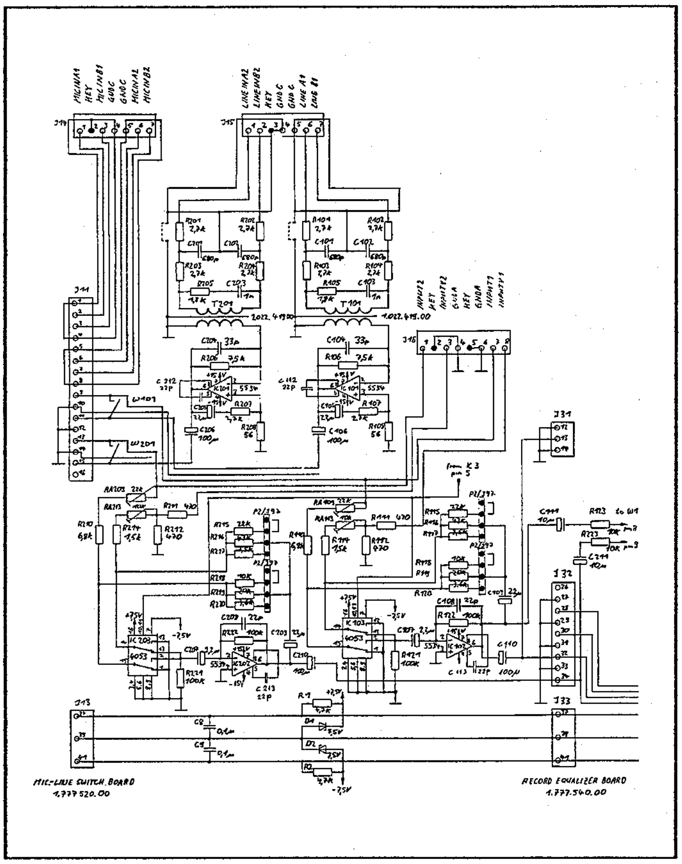

MIC-LINE SWITCH BOARD 1.777.520.00
RECORD EQUALIZER BOARD 1.777.540.00

Fig. 16

The headphones amplifiers (IC151/Q151/Q152 channel 1, IC251/Q251/Q252 channel 2) and the speaker amplifier (IC301/Q301/Q302) are also located on the AUDIO BASE BOARD.

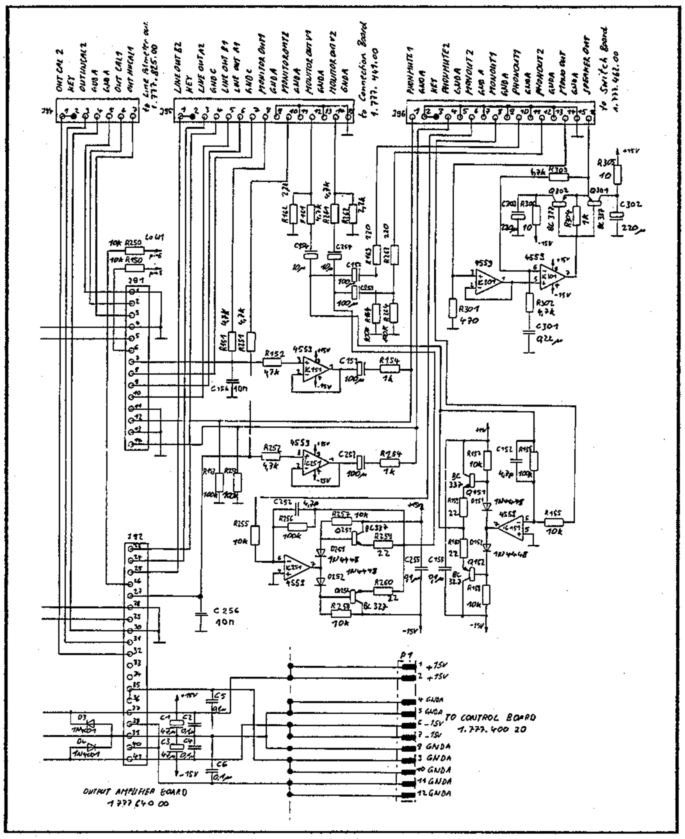


Fig. 17

3.3.2 MIC LINE SWITCH BOARD
1.777.520.00

The MIC LINE SWITCH BOARD is available as an option. All interfaces are routed via the sockets (J11/J13) of the AUDIO BASE BOARD.
The microphone circuit consists of an input transformer (T101 channel 1, T201 channel 2) and a low-noise amplifier (IC101/Q101 channel 1, IC201/Q201 channel 2) which can be programmed for two sensitivities by means of jumpers (P101 channel 1, P201 channel 2).
The amplifier output is connected to a changeover switch (IC102 channel 1, IC202 channel 2) with which a microphone or line can be selected. For microphone operation the switches (W101 channel 1, W202 channel 2) on the AUDIO BASE BOARD must be open. In microphone mode the corresponding cal-uncal stage is supplied by the output of the changeover switch (IC103).

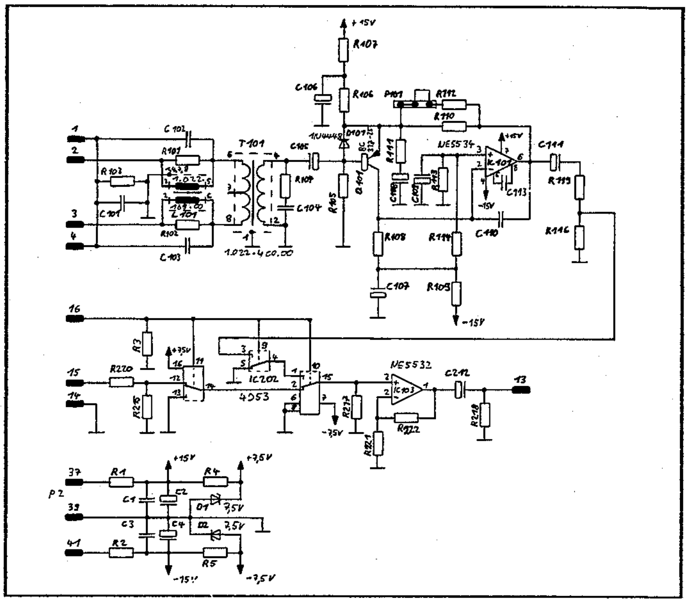


Fig. 18 (CH1)

3.3.3 RECORD EQUALIZER BOARD
1.777.540.00

All interfaces are routed via the sockets (J31/J32/J33) of the AUDIO BASE BOARD. The input signal passes through an equalizer stage (IC101/IC104) channel 1, IC201/IC204 channel 2) and subsequently a treble stage (IC101/IC102/IC103) channel 1, IC201/IC202/IC203 channel 2). The equalizer stage consists of an active filter that can be changed over for two speeds.
In order to achieve the desired flexibility (NAB or IEC versions), the components that determine the frequency are located on the RECORD SPEED PCB, socket J1/J2). The phase-linear treble circuit can be adjusted for two speeds with the potentiometers (RA11/RA12 channel 1, RA21/RA22 channel 2) with respect to the level, and with the potentiometers (RA13/RA14 channel 1, RA23/RA24 channel 2) with respect to the level.

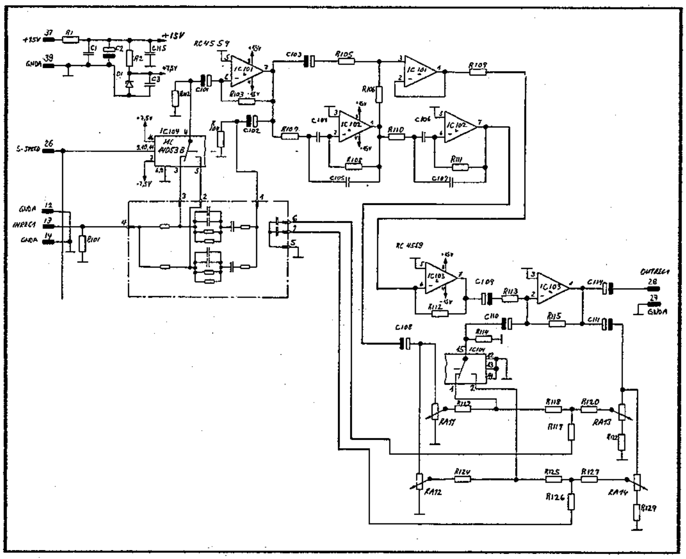


Fig. 19 (CH1)

3.3.4 RECORD SPEED BOARD IEC

The following record speed boards, responsible for the equalization frequency according to IEC standards, are available:

■ Record speed board 3 3/4 / 7 1/2 ips IEC	1.777.550.00
■ Record speed board 7 1/2 / 15 ips IEC	1.777.552.00
■ Record speed board 3 3/4 / 15 ips IEC	1.777.554.00

3.3.5 RECORD SPEED BOARD NAB

The following record speed boards, responsible for the equalization frequency according to NAB standards, are available:

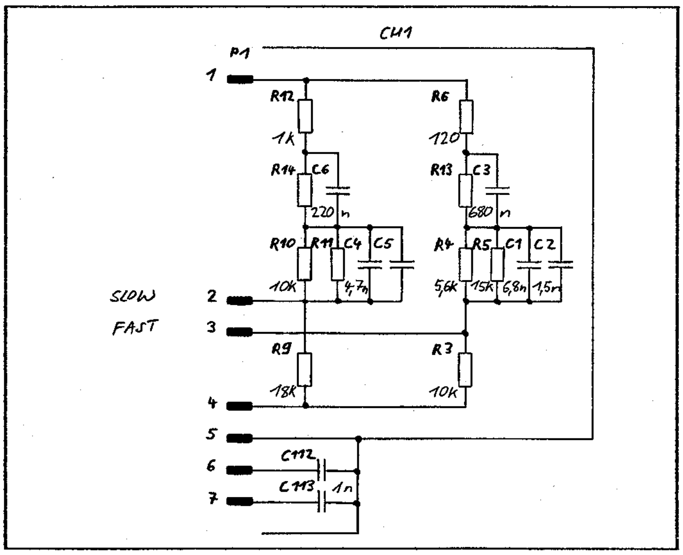


Fig. 20 (CH1)

■ Record speed board 3 3/4 / 7 1/2 ips NAB	1.777.556.00
■ Record speed board 7 1/2 / 15 ips NAB	1.777.558.00
■ Record speed board 3 3/4 / 15 ips NAB	1.777.559.00

3.3.6 ERASE AMPLIFIER BOARD
1.777.560.00

All interfaces are implemented with sockets (J41/J42/J43) of the AUDIO BASE BOARD.
The 153.6 kHz square-wave reference signal is input to a low-pass filter and a subsequent band-pass filter (IC14/L1/C45/C46). The resulting sine wave signal is used as the input reference for the erase and bias voltage-controlled amplifiers (IC102 erase, IC303 bias).
The output of the voltage-controlled amplifier is connected to the erase output stages (Q101-Q107 channel 1, Q201-Q207 channel 2). The outputs are taken via parallel resonant circuits (T101/C112/C113/C114 channel 1, T201/C212/C213/C214 channel 2) and the relay contact (K1 on the BIAS CONTROL BOARD) to the erase head on the headblock. On/off-switching is performed by (IC101). The potentiometers (RA108 channel 1, RA208 channel 2) are used for adjusting the erase voltage.

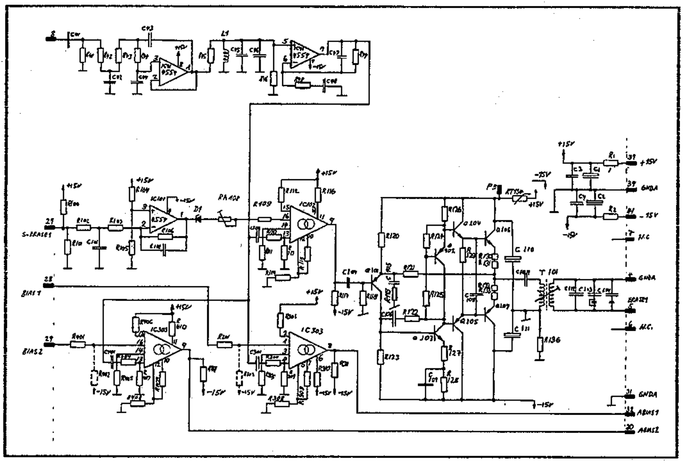


Fig. 21 (CH1)

3.3.7 BIAS CONTROL BOARD 1.777.570.00

All interfaces are implemented with sockets (J51/J52/J53 for channel 1, and J61/J62/J63 for channel 2).
The output of the voltage-controlled amplifier (IC303 on the ERASE AMPLIFIER BOARD) is connected to the bias output stage (Q4 to Q10). The output is taken via the parallel resonant circuit (T1/C20/C21) and the record sync changeover relay (K1) to the record head.
The audio signal from the RECORD EQUALIZER BOARD is connected via a current-voltage output stage (IC1) and a band-pass filter (L1/C7/C8/C9) to the above mentioned resonant circuit which causes the record current to be superimposed on the RF bias current. The serial resonant circuit (L2/C10/C11) closes the RF circuit.
FET (Q3) and its control circuit (Q1/Q2) ensure click-free activation of the signal path. The mixed RF/AF signal is weighted (R64/C23) and input to an active rectifier (IC2/D2/D3). The rectified signal is taken to a comparator stage (IC3). The reference of this comparator stage is adjusted with the potentiometer (RA1) and (RA2) respectively. This reference voltage determines the bias current.

The comparator output supplies the control voltage for the voltage-controlled amplifier on the erase amplifier board. This HX-PRO control circuit achieves a greater treble dynamic range at high level and high frequencies.

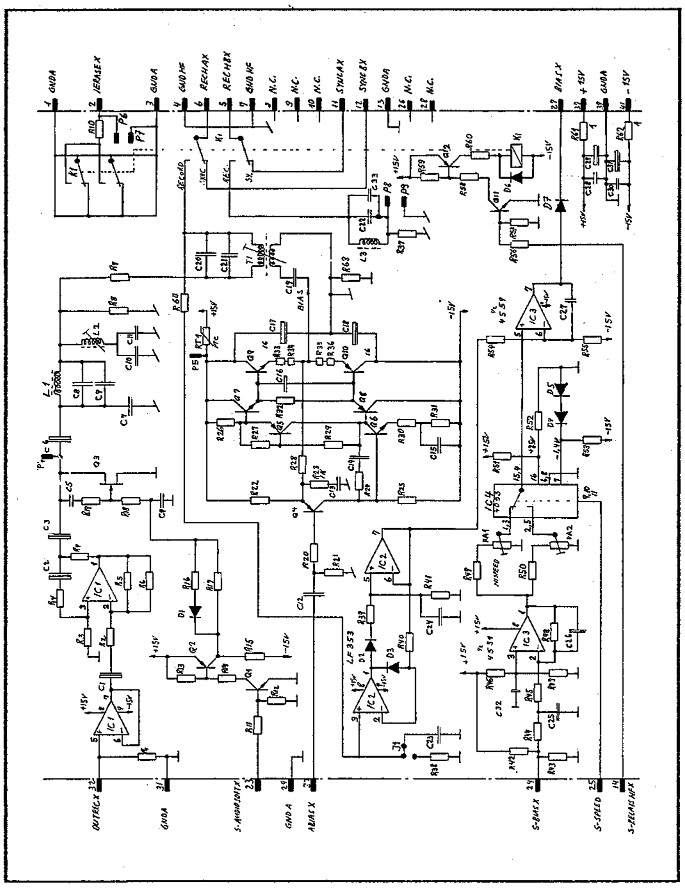


Fig. 22

3.3.8 PREAMPLIFIER BOARD 1.777.610.00

The interface consists of the sockets (J71/72/J73.

The reproduce head on the headblock supplies the input voltage for the reproduce preamplifier (IC101/Q101 channel 1, IC101/Q201 channel 2). The record head on the headblock supplies in SYNC mode the input voltage for the balanced transformers (T101 channel 1, T201 channel 2) and the synch reproduce preamplifier (IC102/Q102 channel 1, IC102/Q202 channel 2).

Depending on the preselection, the reproduce or the sync play signal is input via a lowpass filter (L101/C107/C108/C109 channel 1, L201/C207/C208/C209 channel 2) to the REPRODUCE EQUALIZER BOARD.

The FET (Q105/Q103/Q104 channel 1, Q205/Q203/Q204 channel 2) ensures click-free record/sync changeover. The sync reproduce level is adjusted with the potentiometer (RA171 channel 1, RA207 channel 2).

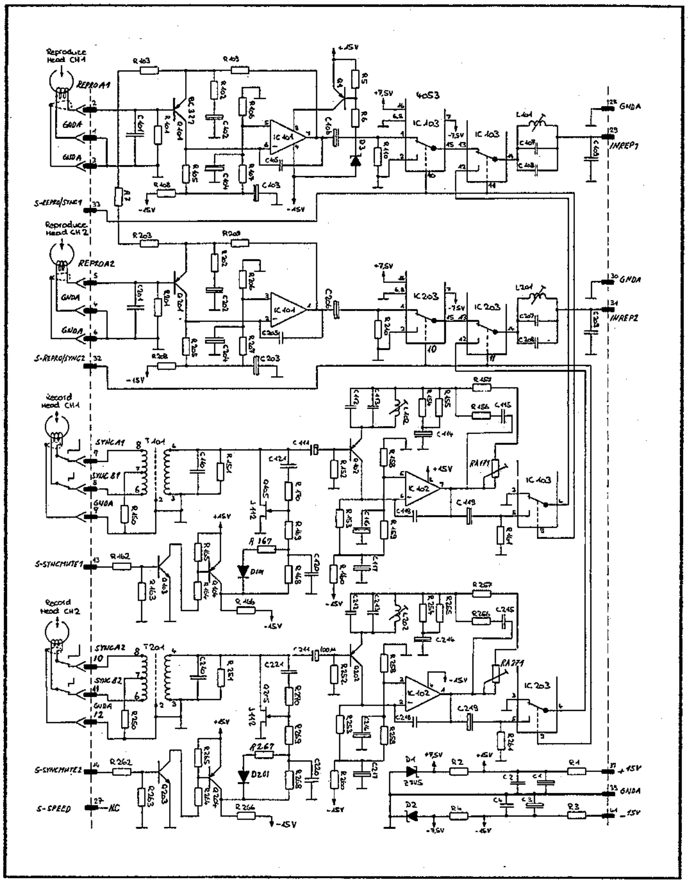


Fig. 23

3.3.9 REPRODUCE EQUALIZER BOARD 1.777.620.00

The input signal passes through a equalization stage (IC101/IC102 channel 1, IC201/IC202 channel 2) and subsequently the treble stage (IC101/IC102 channel 1, IC201/IC202 channel 2). An active filter that can be changed over for two different speeds serves as an equalization filter.
In order to achieve the desired flexibility, the components that determine the frequency response for the NAB or IEC version are located on the plug-in REPRO SPEED BOARD, socket holder (J1/J2). The treble circuit can be adjusted with the potentiometer (RA112/RA118 channel 1, RA212/RA218 channel 2) for the frequency response, and with potentiometer (RA116/RA122 channel 1, RA216/RA222 channel 2) for the level. The output of this stage is taken to a selector switch (IC103 channel 1, IC 203 channel 2) which selects repro/sync or input, depending on the preselection. In edit mode, the input signal is matched to the level with the switch (IC102 channel 1, IC202 channel 2).

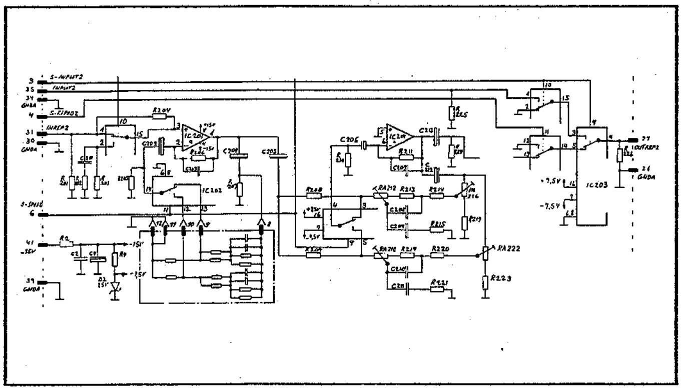

IC203
RA222
R223
S-SPIEG
GNDA

Fig. 24 (CH2)

3.3.10 REPRO SPEED BOARD IEC

The following repro speed boards, responsible for the equalization frequency according to IEC standards, are available:

- Repro speed board 3 3/4 / 7 1/2 IEC 1.777.630.00
- Repro speed board 7 1/2 / 15 IEC 1.777.632.00
- Repro speed board 3 3/4 / 15 IEC 1.777.634.00

3.3.11 REPRO SPEED BOARD NAB

The following repro speed boards, responsible for the equalization frequency according to NAB standards, are available:

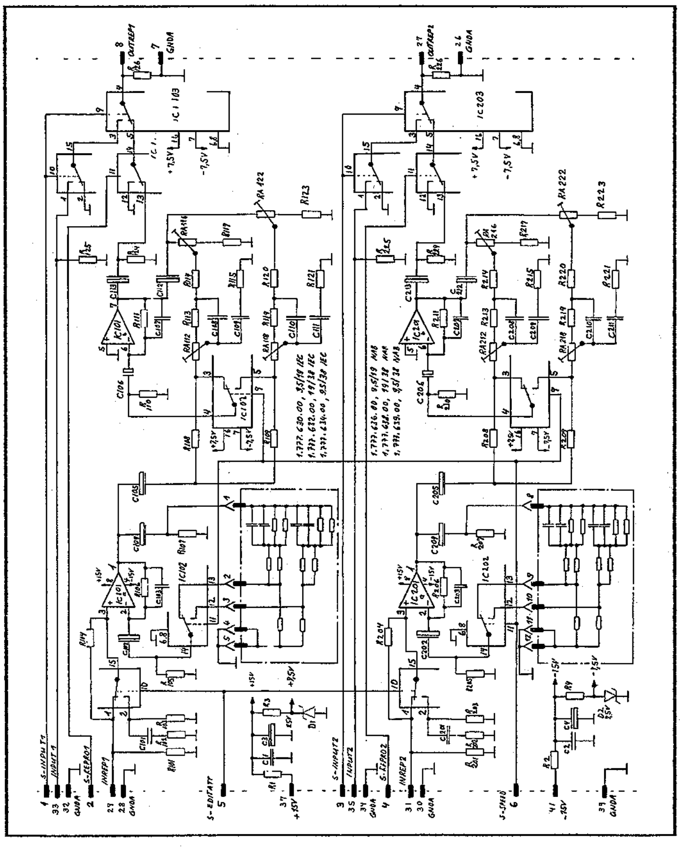

IC103
IC203
IC101
IC201
RA122
RA222
R123
R223
S-INPUT1
INREP1
S-INPUT2
INREP2
S-EDITATT
S-SPIEG
GNDA

Fig. 25

- Repro speed board 3 3/4 / 7 1/2 NAB 1.777.636.00
- Repro speed board 7 1/2 / 15 NAB 1.777.638.00
- Repro speed board 3 3/4 / 15 NAB 1.777.639.00

3.3.12 OUTPUT AMPLIFIER BOARD
1.777.640.00

The interfaces are implemented with the sockets (J91/J92). The incoming signal passes through the cal-uncal amplifier (IC101/IC102 channel 1, IC201/IC202 channel 2) and subsequently the power output amplifier (IC103/Q101/Q102 channel 1, IC203/Q201/Q202 channel 2).
The cal or uncal range can be adjusted with the potentiometers (RA100/RA101 channel 1, RA201/RA202 channel 2). The control range can be additionally matched with jumpers. The output (IC101/R101 channel 1, IC201/R201 channel 2) supplies the phones stage on the AUDIO BASE BOARD. The output of the cal-uncal circuit (IC101 channel 1, IC201 channel 2) supplies the repro input (IC8 channel 1, IC9 channel 2) of the VU-PEAK BOARD. The line output is balanced (T1 channel 1, T2 channel 2) and is muted with the relay contacts (K1).

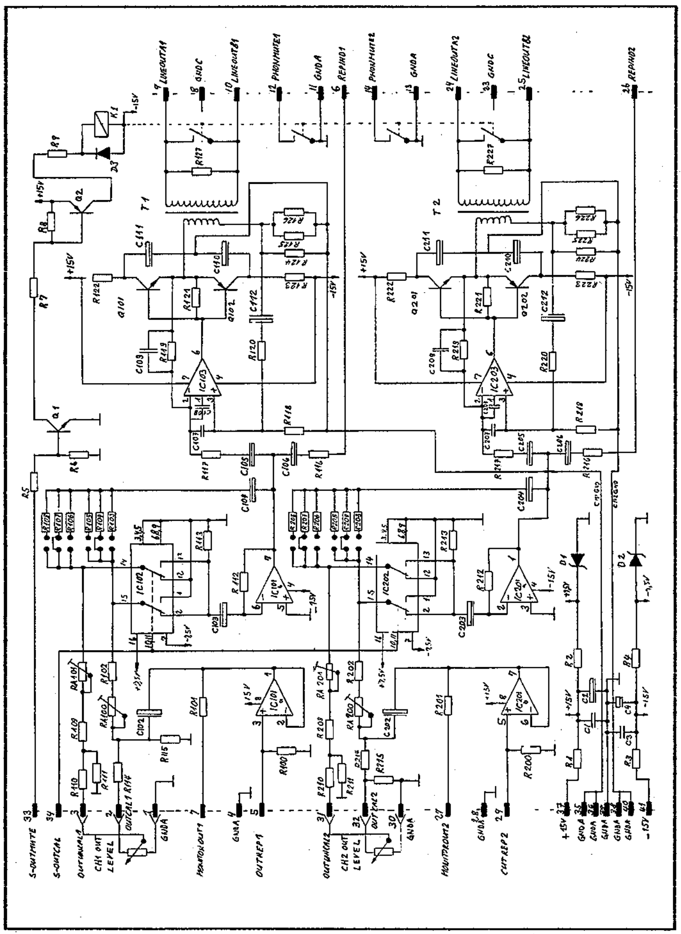

K1
T1
T2
Q1
Q2
IC101
IC201
GNDA

Fig. 26

3.3.13 AUDIO SWITCH BOARD 1.777.462.00

The AUDIO SWITCH BOARD contains the preselector switch (S1) for the monitor and headphones outputs, the level of which can be adjusted with the potentiometer (RA5). The headphones and output signals are connected to the jack plug (J4). The small speaker, connected to (J8), is switched off when the jack plug is inserted, or by means of a switch (potentiometer).

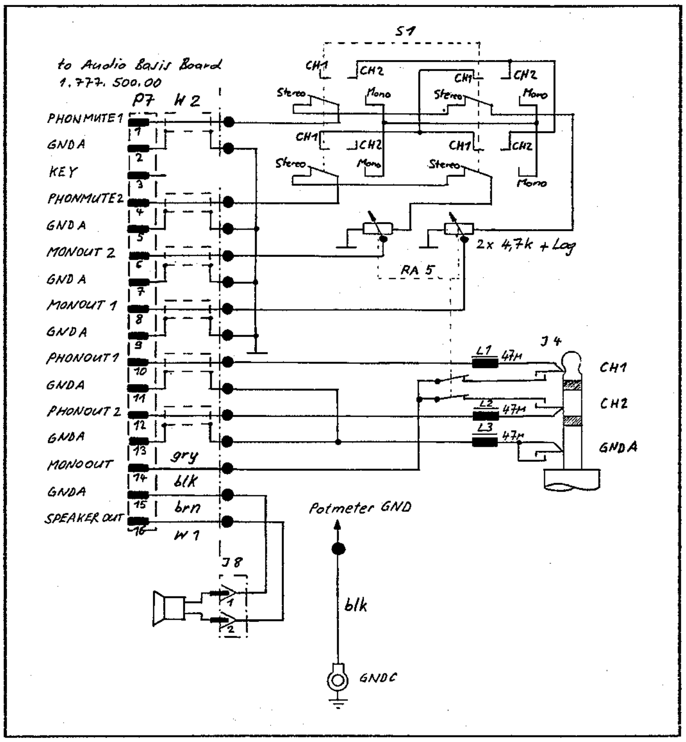

to Audio Basis Board
1.777.500.00
P7
W2
PHONMUTE1
GNDA
KEY
PHONMUTE2
GNDA
MONOUT 2
GNDA
MONOUT 1
GNDA
PHONOUT1
GNDA
PHONOUT2
GNDA
MONOOUT
GNDA
SPEAKER OUT
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
gry
blk
brn
W1
S1
CH1
CH2
Stereo
Mono
2x 4,7k + Log
RA 5
L1 47H
L2 47H
L3 47H
J4
CH1
CH2
GNDA
Potmeter GND
blk
GNDC
J8

Fig. 27

3.3.14 VU-PEAK BOARD 1.777.460.00

The VU PEAK BOARD contains the VU and peak instrument. The signal which, depending on the preselection is either input or repro (IC8/IC4 channel 1, IC9/IC4 channel 2), is input to an active rectifier (IC3/D1/D2 channel 1, IC7/D101/D102 channel 2). The output of this stage supplies the VU instrument (ME1 channel 1, ME2 channel 2) and after an integrator also the peak comparators (IC1/IC2 channel 1, IC5/IC6 channel 2). Via drivers (Q1-Q3 channel 1, Q4-Q6 channel 2), the comparator outputs activate the LEDs (DL8-10 channel 1, DL108-DL110 channel 2). The VU meters are adjusted with the potentiometers (RA2 channel 1, RA102 channel 2), the VU peak meters are adjusted with the potentiometers (RA3 channel 1, RA103 channel 2). The potentiometers (RA1 channel 1, RA101 channel 2) adjust only the reproduce level for the VU + peak meter. Four lamps are available for the instrument illumination (B1/B2 channel 1, B3/B4 channel 2).

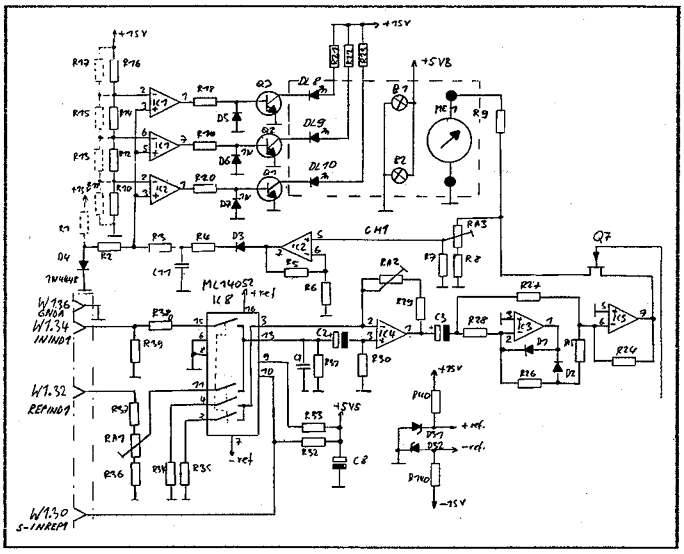

+15V
+5VB
R17
R16
R15
R14
R13
R12
R11
R10
R1
R2
R3
R4
D3
D4
1N4448
D5
D6
D7
IC1
IC2
R18
R19
R20
Q1
Q2
Q3
DL8
DL9
DL10
B1
B2
ME1
R9
CH1
RA3
R7
R8
Q7
R5
R6
C11
ML14052
IC8
+ref
-ref
W1.36
GNDA
W1.34
ININD1
W1.32
REPIND1
W1.30
S-INREP1
R38
R39
R37
RA1
R36
R34
R35
C1
R31
C2
R30
IC4
RA2
R29
C3
R28
IC3
D1
D2
R27
R26
R25
R24
IC5
R33
R32
+5VS
C8
R40
D51
D52
R140
-15V

Fig. 28 (CH1)

4. ALIGNMENT INSTRUCTIONS

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4.1 REQUIRED TOOLS AND AIDS

The following tools and aids are required for aligning the C270 tape recorder:

▪ AF millivoltmeter	Part No.: 46020
▪ AF generator	Part No.: 46021
▪ Demagnetizing choke	
Large	Part No.: 46595
Small	Part No.: 46596
▪ Spring dynamometer, 500 g	Part No.: 46177
▪ EXTENDER BOARD	Part No.: 46126
▪ Set of extension cables	Part No.: 46125
▪ Reproduce reference tape	
3 3/4 ips	Part No.: 46003
7 1/2 ips	Part No.: 46001
15 ips	Part No.: 46002
▪ Frequency counter	Part No.: 46025
▪ Cathode ray oscilloscope	On request
▪ Analog multimeter	On request
▪ Selective voltmeter	B≤100 Hz
▪ Grease pen	
▪ Tweezers	
▪ Screwdriver	Size: 00
▪ Screwdriver	Size: 0
▪ Screwdriver	Size: 2
▪ Screwdriver	Size: 3
▪ Hexagon-socket-screw key	Size:2.5

4.1.1 General information

Caution:
Shock hazard when the unit is open!
Certain components are energized with line voltage

When modules supplied by STUDER REVOX are installed, the C270 must be recalibrated. The same applies if modifications are made on individual modules.

If the record or the reproduce head needs to be replaced, the machine should preferably be forwarded to the nearest REVOX service center.

4.1.2 Demagnetizing

Switch off the tape recorder and move the tape sufficiently far away. Slowly approach the part to be demagnetized very closely with the energized choke and after a short period retract it slowly or, with a regulating transformer, slowly increase the voltage from min. to max. and back from max. to min. This procedure is to be repeated for all metallic parts that come in contact with the tape (soundheads, tape guides, idler rollers, lifting pin). Before you switch off the choke, remove it at least 50 cm (20") from the unit.

IMPORTANT: If the choke is placed too closely to the tape, the recorded tapes will also be demagnetized!

4.1.3 Level definitions

The following Section gives an overview of the many level standards that are used in conjunction with audio measurements.

- **Voltage level 0 dBm (=0.775 V)**
  This level definition has been derived from the 1 mW power level in any load resistance. The voltage drop across a 600 ohm load is 0.775 V. This voltage is defined as 0 dBm (regardless of the load).

- **0 dBu (= 0.775 V)**
  This level correspond to a voltage of 0.775 V regardless of the load resistance. [dBu] is occasionally used in place of the voltage level [dBm].

- **Line level**
  The line level refers to the level that is available at the output of a tape recorder when a tape with reference fluxivity is being played, or fed into the input of a tape recorder when a recording produces reference fluxivity.

- **Voltage reference level**
  CCIR designation for line level; this level produces a reading of 0 dB on a quasi peak program meter (PPM).

- **Standard reference level (operating level)**
  A term commonly used in the USA for a tape flux of 250 nWb/m (for recording on high-output tapes) or 200 nWb/m (for recording on standard tapes); this level produces a VU-meter reading of 0 VU.

- **Peak level**
  A term commonly used in the USA for a level that is 8 to 10 dB higher than the operating level. For reasons of simplicity, a peak level of +6 dB relative to operating level (double the voltage level) is used.

- **IEC/CCIR setting**

DEFINITION:	LINE LEVEL [dBm]	VU-METER-READING [dB]
REFERENCE LEVEL:	0	0

- **NAB-setting**

DEFINITION:	LINE LEVEL [dBm]	VU-METER READING dB]
OPERATING LEVEL:	+ 4	0
PEAK LEVEL:	+10	+6

4.2 ALIGNMENT OF MECHANICAL COMPONENTS

4.2.1 General information

Because the chassis is made of rigid die-cast aluminum alloy, the 3-motor tape deck requires virtually no maintenance. The adjustments and measurements are limited to the moving parts.

4.3 HEADBLOCK

4.3.1 Tape guides

Clean the tape guide [1.2]. Do not adjust tape guide [2]. If necessary it can be removed from the headblock [3] by means of a Phillips screwdriver.

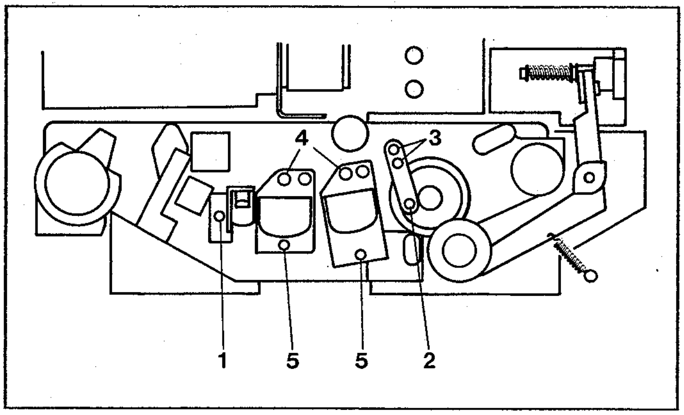

Fig. 1

4.3.2 Soundheads

Adjust the soundhead height with the aid of a section of magnetic tape or transparent tape.

- Lightly coat the head face of the record and reproduce head near the gap with a grease pen. Run a short section of the tape and check that the headgap is in the center of the area that is polished off.
- Clean the headface.
- Height correction are made with the screws [4,5]

4.4 BRAKES

The brakes are active when the brake solenoid is not energized or when the STOP key is pressed.

4.4.1 Measuring the retarding torque

The measured values refer to a hub size of 115 mm.

- Mount an empty reel and lock it.
- Wind a few turns of fine string on the reel. In order to measure the retarding torque, a spring dynamometer is attached to the end of the string.
  With the spring dynamometer slowly pull in the corresponding direction. If the values shown on the diagram Fig. 2 are not achieved, the brake system must be checked. The brake linings and bands must be absolutely clean and free of grease.

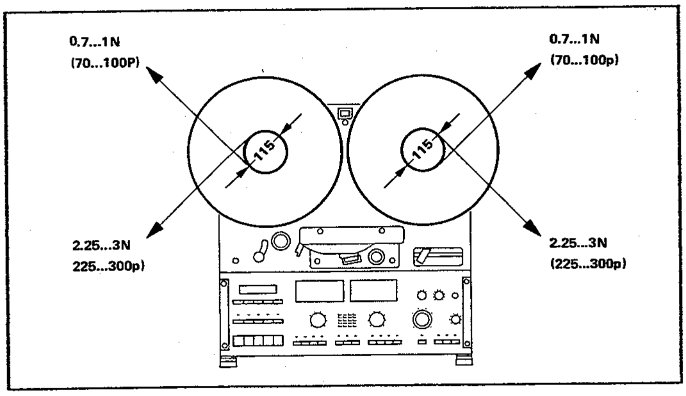

Fig. 2

4.4.2 Adjusting the brakes

Contaminated brake linings can be cleaned with ethyl chloride. Brake bands must be free of kinks and make contact with the brake lining across their full width.

After the brake bands or brake rollers have been replaced, the travel and the mechanical brake assemblies are adjusted as follows:

- Release the brake manually (push in the brake armature).
- Check that both brake systems are disengaged simultaneously by the lifting pins.

If this is not the case, the brake chassis can be unfastened (three screws A, Fig. 3) and shifted so that the brake bands lift off simultaneously. One of the brake adjustment levers can be lightly bent inward, if necessary.

The brake solenoid must be adjusted in the energized condition.

- Unscrew the reel flange.
- Actuate the PLAY key and lift the tape tension sensor.
- Unfasten the mounting of the brake solenoid and shift it in such a way that no grinding noise is audible on the brake drums.
- Retighten the brake solenoid.

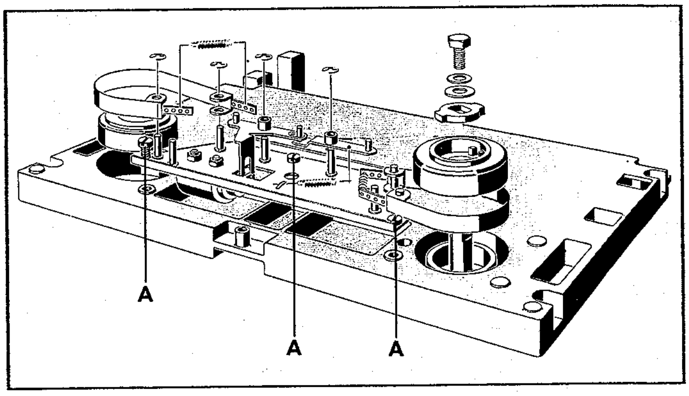

Fig. 3

4.5 PINCH ROLLER

The pinch roller arm is actuated electromagnetically. The pinch force is defined by the adjustable spring tension.

4.5.1 Measuring the pinch force

- Press the PLAY key.
- With tape present. Attach a piece of nylon string to the pinch roller shaft (or to a pin attached to it) and pull with a spring dynamometer in the direction A (Fig. 5) until the pinch roller lifts off the capstan shaft and flutter becames audible. The spring dynamometer should indicate 10 N ±1 N (1 kp ±0.1 kp).

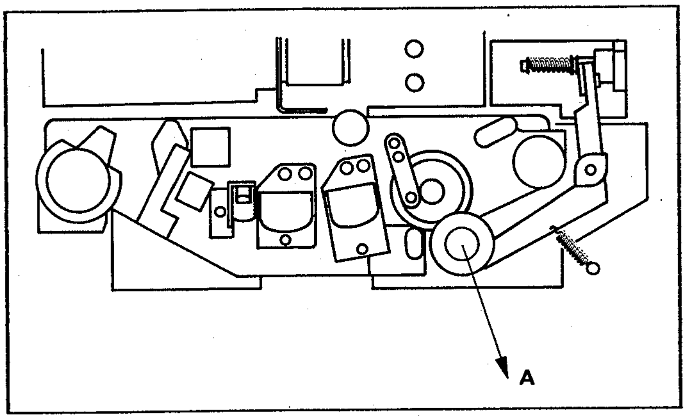

Fig. 4

4.5.2 Adjusting the pinch roller assembly

- Switch the machine to PLAY mode.
- With tape present, cover the light opening at the optical tape end sensor and lift off the tape tension sensor.
- Shift the pinch roller solenoid to the right so that a distance B of 1 mm (Fig. 5) is created between the driver and the pinch roller arm. Retighten the pinch roller solenoid.
- Check that the armature of the pinch roller solenoid rests against the stop. Lightly lift the pinch roller arm away from the capstan shaft; the armature should not move.
- Secure the fixing screws of the pinch roller solenoid with a drop of locking paint. Check the pinch roller force and adjust it with screw C (Fig. 5) if necessary.

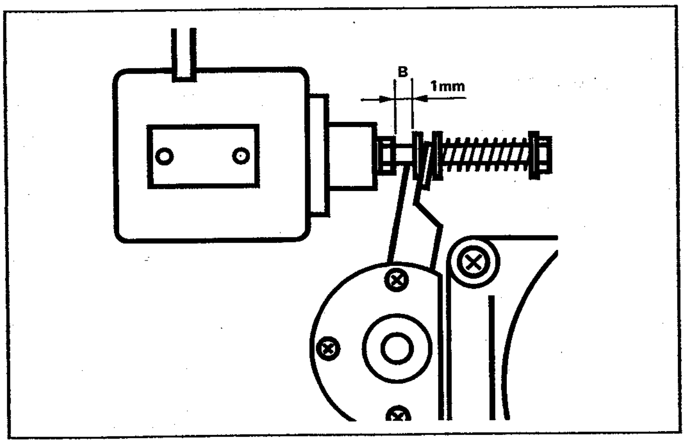

Fig. 5

4.6 TAPE DRIVE ADJUSTMENTS

4.6.1 Preparatory steps

- Unfasten the CONTROL BOARD and tilt it backward by 90°. Any electrical connections that have been separated must be reestablished with extension cables.
- Adjust the dip switch (SZ1) as follows:

1	2	3	4	5	6	7	8
ON	OFF	OFF	OFF	OFF	OFF	ON	OFF

This setting corresponds to the standard version. For special versions, the dip switch is set only after the tape deck has been adjusted.
The different versions are described in Section 3.2.2.

4.6.2 Adjusting the capstan

- Switch on the tape recorder and preselect the SLOW tape speed (3 3/4 ips). The SPEED DEVIATION must be disabled (VARIABLE OFF).
- Connect the frequency counter on the CAPSTAN SERVO BOARD to test point P2 and adjust to a frequency of 5.5 MHz with L2.
- Connect the oscilloscope to test point P3, keep the PLAY key pressed, and align with L3 to maximum signal amplitude.
- Keep the PLAY key pressed and with trimmer potentiometer RA2 align the capstan motor to minimum noise generation.
- Turn the SPEED DEVIATION potentiometer to the clockwise limit position, switch on VARIABLE.
- Connect the frequency counter to the common point of R13, R14 and with trimmer potentiometer RA1 adjust to a frequency of 14.4 kHz.
- Switch off the recorder, remove the extension cables, and reinstall the CONTROL BOARD.

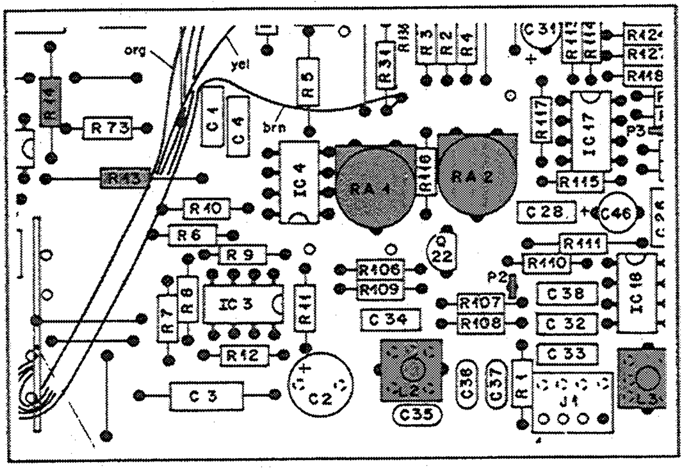

Fig. 6

4.6.3 Adjusting the tape tension sensor

NOTE:
The following adjustment procedure is also required on machines with modified tape tension sensors (2 springs).

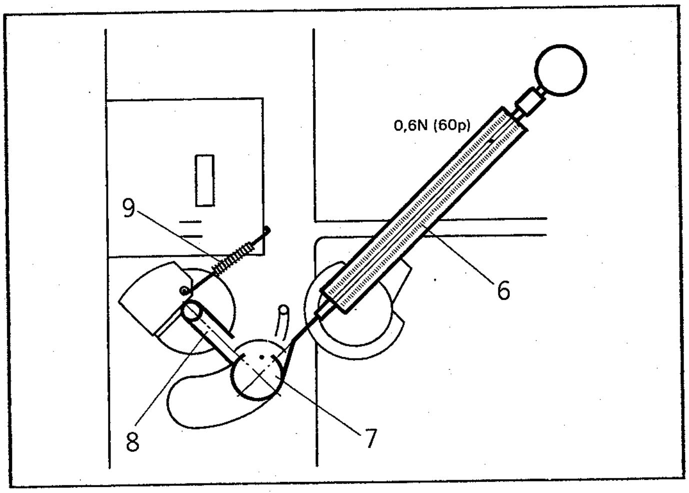

Fig. 7

- Remove the tape transport cover.
- Attach the spring dynamometer [6] to the tape roller shaft [7] and pull perpendicularly to the sensor arm [8].
  When the sensor arm is approximately in the middle of its working range, hook the tension arm spring [9] into the corresponding hole so that the spring dynamometer gives a tension reading of 0.55 – 0.6 N (60 p).
- Reinstall the cover.
- Mount a tape in such a way that both reels have a pancake diameter of approx. 20 cm.
- Connect the oscilloscope to test points P6 and P7 (ground) of the CONTROL BOARD (Fig. 8).
- Switch on the tape recorder.
- Adjust the trimmer potentiometer RA3 so that a difference of 4 V between the lower and the upper sensor arm position is obtained.
- Adjust the trimmer potentiometer RA2 so that a reading of 4 V is obtained when the sensor arm is in the lower limit position.
- Check that the voltage on the oscilloscope shifts from 4 V and 0 V when the sensor arm is moved from the lower to the top limit position.
- Remove oscilloscope probe and adjust the following tape tensions with trimmer potentiometers RA7, RA6, RA5 (Fig. 9):

FUNCTION	FORCE ±15%	TRIMMPOT.
Forward	0.55–0,60 N (60 p)	RA7
Rewind	0.55–0,60 N (60 p)	RA6
Play	0.55–0,60 N (60 p)	RA5

- Spool the magnetic tape so that both pancake diameters are about the same (approx. 20 cm).
- Preselect edit and adjust the edit tape tension with trimmer potentiometer RA4 (Fig. 9) in such a way, that about the same amount of tape is unwound when the reel is turned with the same force.

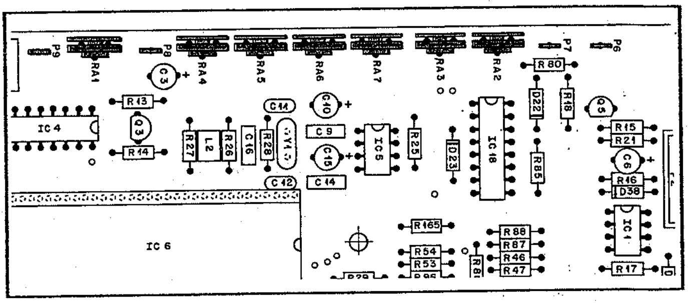

Fig. 8

4.6.4 Adjusting the tape sensor

- Connect the oscilloscope probe to test points P8, P9 (ground) on the CONTROL BOARD (Fig. 9).
- With trimmer potentiometer RA1 align the light barrier in such a way that the difference between the transparent leader (oscilloscope voltage = 0 V) and the oxide coated tape (oscilloscope voltage = +5 V) can be measured with the oscilloscope.
- Switch off the tape recorder and program the dip switch (SZ1) in accordance with the model.

4.6.5 Adjusting tacho roller

No electrical adjustment is necessary for the tacho roller.
After repairs have been made, make sure that the optical alignment between the tacho roller and the TAPE MOVE SENSOR PCB 1.020.316.00 is correct.
The detailed conditions are explained in the disassembly instructions, Section 2.4.11.

4.7 AUDIO ALIGNMENTS

4.7.1 Input amplifier

Important: Always terminate the measuring cable with 10 kohms.
Fig. 20/21 as well as the pin assignment drawing can be found on the foldout page at the back of these instructions.

- The two jumpers (W101, W201) (Fig. 20) on the AUDIO BASE BOARD are only open when the tape recorder is equipped with the MIC LINE SWITCH BOARD.
- Connect the AF generator to the LINE INPUT CH1 (pin 2/3).
- Connect the AF millivoltmeter to the MONITOR socket (DIN socket, pin 1 = CH1, pin 4 = CH2, pin 6 = GND).
- Switch on the tape recorder and preselect INPUT mode for both channels. The recorder must be operated in CAL mode.
- With the generator feed a 1 kHz sine wave signal with an input level of 0 dBm (IEC) or +4 dBu (NAB) (0 dBu = 0.775 V).
- With the CAL trimmer potentiometer [CH1=RA109, CH2=RA209] and the adjacent jumpers (Fig. 20) on the AUDIO BASE BOARD, adjust the MONITOR output level to -6 dB.
  Note the following table "LINE INPUT jumper ranges".
- Activate the UNCAL mode, set the two potentiometers INPUT CH1 and INPUT CH2 on the control panel to position 5.
- In the same way as before, adjust the MONITOR output level to -6 dB as before by means of the UNCAL trimmer potentiometers [CH1=RA113, CH2=RA213].
  Note the following table "LINE INPUT jumper ranges".

LINE INPUT jumper ranges

Internal reference level: -6 dB = 0 VU
Potentiometer setting: "5"

CAL Position		UNCAL		Jumper
min. (dB)	max. (dB)	min. (dB)	max. (dB)	H (High) M (Medium) L (Low)
-10	+1,5	-10	+4	H
-2	+9	0	+15	M
+4	+16	+6	+22	L

4.7.2 Output amplifier

Important: Always terminate the measuring cable with 600 ohms. For unbalanced measuring instruments short circuit pins 1 + 3 of the XLR.

- Connect the AF millivoltmeter to the LINE OUTPUT CH1 or CH2 respectively.
- Connect the AF generator to LINE INPUT CH1 and feed a sine wave signal of 1 kHz with an input level of 0 dBu (IEC) or + 4dBu (NAB).
- Switch the input and output amplifier to CAL.
- With the CAL trimmer potentiometer [CH1=RA100, CH2=RA209] and the adjacent jumpers (Fig. 20) on the AUDIO AMPLIFIER BOARD, adjust the AF millivoltmeter reading 0 dBu (IEC) or +4 dBu (NAB).
  Note the following table: "LINE OUTPUT jumper ranges".
- Switch the output amplifier to UNCAL mode and set the two coaxial output potentiometers on the front panel to position 5.
- Like before, adjust the level with the UNCAL trimmer potentiometers (CH1=RA101, CH2=RA201) and the adjacent jumpers (Fig. 20) to obtain an AF millivoltmeter reading of 0 dBu (IEC) or +4 dBu (NAB) respectively.
  Note the following table: "LINE OUTPUT jumper ranges"
- Switch the output amplifier back to CAL.
- With the two trimmer potentiometers INPUT ADJ. CH1 (RA2), INPUT ADJ. CH2 (RA102) on the rear of the control panel (Fig. 21), cause the VU meters to deflect to 0 VU (IEC and NAB!).
- Increase the level on the generator to +9 dBu (IEC) or +13 dBu (NAB) respectively.
- With the trimmer potentiometers PEAK ADJ. CH1 (RA3), PEAK ADJ. CH2 (RA103) on the back of the control panel (Fig. 21), adjust the peak indicator in such a way that the +9 VU LED just light up.
- Perform the input frequency response check while simultaneously checking the frequency response of the VU-meters (level 0 VU; freq. 0 to 25 kHz).
- Check the accuracy of the peak indication, +6 VU; +9 VU; +12 VU).
  LINE INPUT jumper ranges
  Internal reference level: -6 dB = 0 VU
  Potentiometer setting: "5"

CAL Position		UNCAL		Jumper
min. (dB)	max. (dB)	min. (dB)	max. (dB)	H (High) M (Medium) L (Low)
-5	+15	0	+15	H
-10	+9	-10	+4	M
-20	-2	-20	-8	L

4.7.3 Adjusting the erase head

- Switch off the generator.
- Mount a blank tape and plug the ERASE AMPLIFIER BOARD into the EXTENDER BOARD.
- Connect the "-" lead of the analog multimeter to P5 (CH1) or P4 (CH2) of the ERASE AMPLIFIER BOARDs (Fig. 9) and connect the "+" lead to test point 37 of the extender board.
- With the two READY keys, preselect record and start the unit in record mode.
- Adjust T101 (CH1) and T201 (CH2) to minimum multimeter reading.

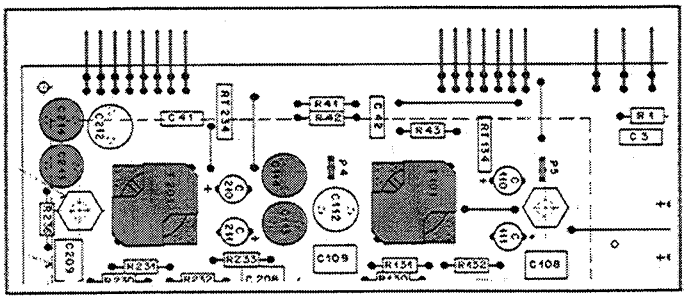

Fig. 9

- If the minimum voltage is reached on either limit position, the adjustment range can be shifted by soldering in C114 (CH1), C214 (CH2) or by disconnecting C113 (CH1), C213 (CH2) at the corresponding locations on the conductor side.

4.7.4 Adjusting the erase current

- Connect the oscilloscope probe to the test ERASE CURRENT point and to the corresponding test point (BIAS AMPLIFIER BOARD, Fig. 20).
- Switch on the recorder and preselect record for both channels by means of the READY key. Start the machine in record mode.
- With the erase current trimmer potentiometers RA1, RA2 (Fig. 20), adjust the erase current to 600 mA for each channel (1 mV voltage corresponds to 1 mA current).
- Press the STOP key. Lightly coat the headface of the reproduce and record head near the head gap with a grease pen. Play a short section of the tape and check that the headgap is in the middle of the polished off area, if this is not the case refer to Section 4.3.2.
- Clean the headface.

4.7.5 Playback

- Switch off the recorder, thoroughly clean the tape path and demagnetize the soundheads.
- Connect the AF millivoltmeter to the LINE INPUT CH1 (CH2) and mount the reproduce reference tape.
- Switch on the recorder, set the input and output amplifiers to CAL, and preselect REPRO for both channels.
- Play the 10 kHz section of the reference tape.
- With the adjusting screw [6] (Fig. 10) on the reproduce head, adjust the phase to maximum voltage.
- Connect the LINE OUTPUT CH1 and CH2 in parallel to the millivoltmeter.
- In play mode, adjust the voltage maximum with the 10 kHz section of the reference tape.
- Treat the two LINE OUTPUTs separately again.

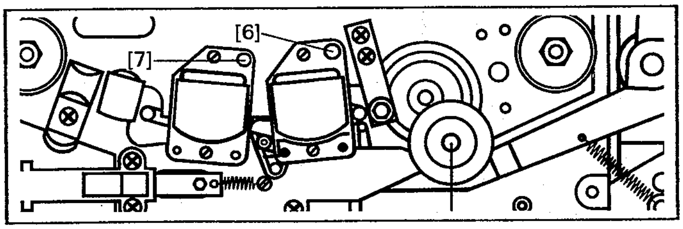

Fig. 10

- Spool to the 1 kHz level tone section and with the level trimmer potentiometers
  RA116 HS CH1
  RA216 HS CH2
  RA122 LS CH1
  RA222 LS CH1
  on the REPRODUCE EQUALIZER BOARD (Fig. 20) adjust to an output level of 0 dBu (IEC) at 257 nWb/m or +4 dBu (NAB).
  The rule is: 257 nWb/m = 0 VU
- Spool forward to the 10 kHz sector.
- With the treble trimmer potentiometers
  RA112 HS CH1
  RA212 HS CH2
  RA118 LS CH1
  RA218 LS CH2
  on the REPRODUCE EQUALIZER BOARD (Fig. 20) adjust the output level again according to the magnetic flux.
- Check the reproduce frequency response with the aid of the reference tape.

4.7.6 Adjusting the record head

- Mount a tape and short-circuit the LINE INPUT CH1 socket (all 3 socket pins across each other).
- With the recorder switched off, plug the BIAS AMPLIFIER BOARD into the extender board.
- Connect the multimeter (-) to P5 (Fig. 14), (+) to test point 37 (EXT.BOARD). Connect the oscilloscope probe to P4 (Fig. 11), ground to test point 39 (EXT.BOARD).
- Switch on the recorder, preselect READY, and start the recording.
- Align with T1 (Fig. 11) to minimum voltage reading on the multimeter.
- Align with T2 (Fig. 11) to minimum RF on the oscilloscope.
  Channel 2 is adjusted analogously.
- Remove the EXTENDER BOARD, reinstall the BIAS AMPLIFIER BOARD.
- With the 10 kHz generator feed a level of -20 dB to the input.
- Connect the AF millivoltmeter to the LINE OUTPUT CH1.
- With the adjusting screw [7] of the record head (Fig. 10), adjust to maximum voltage reading on the AF millivoltmeter.

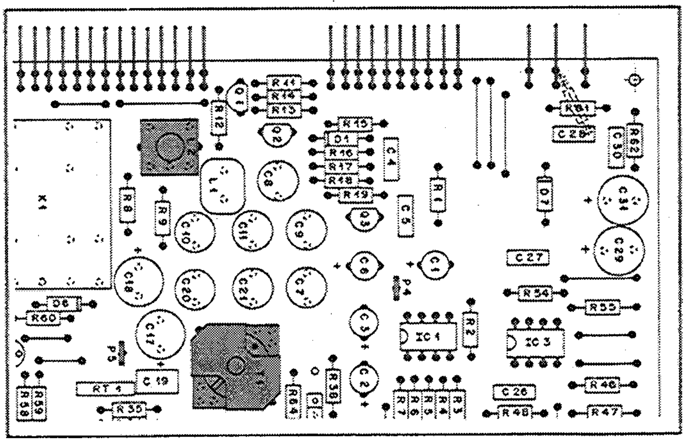

Fig. 11

- Connect both LINE OUTPUTs in parallel to the AF millivoltmeter.
- With the adjusting screw [7], adjust for maximum output voltage. (note the time delay between the record and the reproduce head).
- Press the STOP key and switch off the recorder.

4.7.7 BIAS

- Connect the AF millivoltmeter and the generator (10 kHz - 20 dBu) to the LINE INPUT or OUTPUT CH1 (CH2).
- Turn the bias trimmer potentiometer CH1 RA108 (CH2 RA208) on the ERASE AMPLIFIER BOARD (Fig. 20) to the counterclockwise limit position.
- Switch on the recorder, preselect READY, and start the recording.
- Slowly turn the corresponding BIAS trimmer potentiometer clockwise until the AF millivoltmeter reading reaches the maximum.
- Carefully turn the potentiometer further clockwise until the voltage difference (D) according to Fig. 12 is attained.

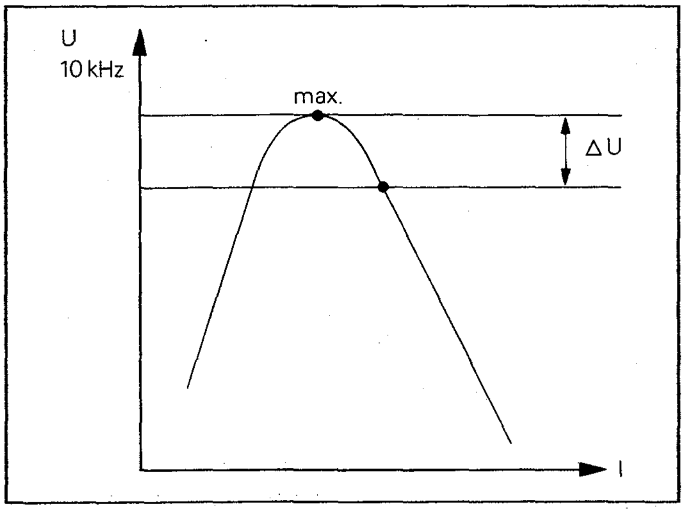

Fig. 12

Tape Speed	9.5 cm/s 3 3/4 ips	19cm/s 7 1/2 ips	38cm/s 15 ips
Type of Tape	ΔU(dB)	ΔU(dB)	ΔU(dB)
REVOX 601	5	4	3
REVOX 621	4,5	4	3
REVOX 631	6	6	4
REVOX 641	6	5	4
SCOTCH 206	5	4	3
SCOTCH 207	5	4	3
SCOTCH 226	6	6	4
SCOTCH 250	5	6	4
SCOTCH 256	6	6	4
SCOTCH 262/263	6	6	3
SCOTCH classic	5	5	3
Ampex 406	6	5	4
Ampex 407	6	5	4
Ampex 456	5	6	4
Agfa PEM 368	5	5	4
Agfa PEM 369	6	6	3
Agfa PEM 468	6	6	4
Agfa PEM 469	7	7	5
Agfa PER 525	6	5	3
Agfa PER 528	6	6	4
BASF LPR-35LH	6	5	4
BASF SPR50 LH(L)	6	5,5	3,5
BASF LGR 30P	6	5,5	4
BASF LGR 50	6	6	4
BASF LGR 51	6	6	4
BASF Studio Master 911	6	8	4,5
Maxell UD-XL	6	5	4
TDK AUDUA	6	5	4
EMI 816/817	6	6	4

4.7.8 Frequency response with tape

- Feed a 1 kHz sine wave signal from the generator with -20 dBu (IEC) or -16 dBu (NAB) and during the recording with REPRO preselected, adjust to an output level of -20 dBu (IEC) or -16 dBu (NAB) on the RECORD EQUALIZER BOARD by means of the corresponding potentiometers (Fig. 20):
  RA13 MS CH1
  RA14 MS CH2
  RA23 LS CH1
  RA24 LS CH2
- Increase the generator frequency to 10 kHz, same level, and adjust the output levels on the RECORD EQUALIZER BOARD by means of the treble trimmers (Fig. 20):
  RA11 HS CH1
  RA12 LS CH2
  RA21 HS CH1
  RA22 LS CH2
  The frequency response is to be checked in accordance with the technical data (see 4.7.10).
- Set the generator frequency to 1 kHz and increase the level to 0 dBu (IEC), +4 dBu (NAB).
- With the REPRO ADJ trimmer potentiometers (Fig. 21) adjust the VU meter reading on the control panel to 0 VU (RA1 CH1, RA101 CH2).

4.7.9 Sync amplifier

- Plug the PREAMPLIFIER BOARD into the EXTENDER BOARD.
- Connect the oscilloscope probe to test point 28 (ground) and 29 for channel 1, or 30 (ground) and 31 for channel 2. All measurement connections are located on the extender board.
- Short circuit both LINE INPUTs (all 3 pins across each other), preselect READY and REPRO. Start the recording.
- With L101 (CH1) or L201 (CH2) adjust to minimum RF on the oscilloscope (Fig. 13).
- Switch the recorder to STOP and connect the ground lead of the oscilloscope to test point 39 on the extender board, and the probe to pin 5 IC103 (CH1) or pin 5 IC203 (CH2) on the PREAMPLIFIER BOARD (Fig. 12).
- Preselect sync for both channels and play a tape section that has previously been erased (no virgin tape).
- With L102 (CH1) or L202 (CH2) adjust to minimal RF on the oscilloscope (Fig. 12).

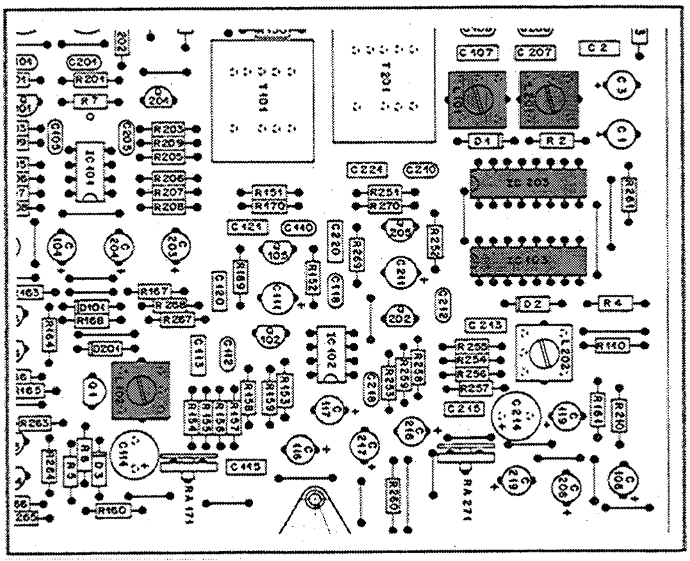

Fig. 13

- Switch the recorder to stop, power off, and remove the extender board.
- Record a frequency of 1 kHz with a level of 0 dB (IEC) or +4 dB (NAB) on both channels with a duration of approx. 1 minute.
- Play the previously recorded tape section and with the SYNC REPRODUCE trimmer potentiometers RA171 CH1 (RA271 CH2) on the PREAMPLIFIER BOARD (Fig. 20) adjust to a level of 0 dBu (IEC) or +4 dBu (NAB).

4.7.10 Frequency response check across tape

- The frequency response with tape present is checked with a generator level of -20 dB.
- Subsequently rewind the tape to the start of the frequency response check and verify the sync frequency response by playing the tape section again.

5. TECHNICAL DATA

All tape-dependent audio data refer to the tape types:
IEC version: AGFA PEM 468
NAB version: 3M 226

Equipment type: 2-channel tape recorder

Tape path: 1/4" width (6.35 mm)

Tape transport: 3-Motor transport: 2 controlled AC spooling motors, 1 Hall-commutated capstan motor, electronically controlled.

Tape speeds: 3 3/4 + 7 1/2; 7 1/2 + 15; or 3 3/4 + 15 ips selectable via internal switches.
Tolerance of the nominal speed: ±0.2%
Varispeed range: -33% to +50% of nominal speed

Wow and flutter: (weighted according to DIN 45507)		for hub size ≥ 10cm	for hub size ≥ 6cm
	at 9,5 cm/s	< 0,10 %	< 0,1 %
	at 19 cm/s	< 0,07 %	< 0,1 %
	at 38 cm/s	< 0,05 %	< 0,1 %

Tape slip: max. 0,2 %
Start-up time (according to DIN):max. 500 ms at 38 cm/s
Winding time: approx. 130 s for 1100 m tape
approx. 90 s for 760 m tape

Reel size: Max. diameter 265 mm

Tape deck control: microprocessor-controlled logic including tape end sensor , tacho roller status sensor, and tape tension arm position.
Tape dump and fader start possible.

Tape counter: Real time indication in hours, minutes and seconds corresponding to the selected tape speed.
Accuracy: 0,25 %
Zero locator, Address locator and LOOP mode possible.

Equalization: NAB and IEC as plug-in modules in record and reproduce path.

NAB	3 3/4 ips:	90 – 3180 µs
	7 1/2 ips:	50 – 3180 µs
	15 ips:	50 – 3180 µs
IEC	3 3/4 ips:	90 – 3180 µs
	7 1/2 ips:	70 µs
	15 ips:	35 µs

Frequency response: (with tape, for -20 VU)

at 3 3/4 ips	30 Hz..14 kHz	± 2 dB
	50 Hz.. 8 kHz	± 1 dB
at 7 1/2 ips	30 Hz..18 kHz	± 2 dB
	50 Hz..12 kHz	± 1 dB
at 15 ips	30 Hz..22 kHz	± 2 dB
	50 Hz..16 kHz	± 1 dB

Frequency response for SYNC track reproduction:

at 3 3/4 ips	100 Hz.. 5 kHz	+2/-3 dB
at 7 1/2 ips	100 Hz.. 8 kHZ	+2/-3 dB
at 15 ips	100 Hz..12 kHz	+2/-3 dB

Peak level recording: 514 nWb/m, corresponds: +6 dB above 0 VU

Level meter: VU-meter according to ASA standard with peak LEDs for levels of +6, +9, +12 dB

Distortion: (k3 at 1 kHz)

3 3/4 ips (400 nWb/m)	< 1,5 %
7 1/2 ips (514 nWb/m)	< 1,2 %
15 ips (514 nWb/m)	< 1,0 %

Signal-to-noise ratio:	(with tape)	
		linear / A-weighted IEC179
IEC version:	3 3/4 ips (400 nWb/m)	> 56 dB / 61 dB
	7 1/2 ips (514 nWb/m)	> 58 dB / 64 dB
	15 ips (514 nWb/m)	> 59 dB / 65 dB
		linear / A-weighted IEC179
NAB version:	3 3/4 ips (400 nWb/m)	> 56 dB / 61 dB
	7 1/2 ips (514 nWb/m)	> 60 dB / 65 dB
	15 ips (514 nWb/m)	> 59 dB / 64 dB
Cross-talk cancellation:	Stereo at 1 kHz	> 50 dB
	Mono at 1 kHz	> 70 dB
Erase depth:	at 7 1/2 ips	better than -80 dB
	at 15 ips	better than -75 dB
Inputs per channel:	(0 dBu = 0,775 V)	
LINE IN:	balanced input (XLR) with isolation transformer,	
	input resistance	> 5 kΩ
	CAL (IEC): for 514 nWb/m	+ 6 dBu
	Adjustment range	-10...+16 dBu
	CAL (NAB): for operation level (0 VU)	+ 4 dBu
	Adjustment range	-10...+16 dBu
	UNCAL: possible increase +10 dB each.	
	Max. level: for f > 40 Hz	+22 dBu
Microphone inputs:	(retrofittable)	
	Balanced input (XLR) with isolation trransformer.	
Input impedance:	40 Hz..15 kHz	> 1,2 kΩ
Sensitivity:	"LO" position	-70 dBu ... -36 dBu
	"HI" position	-38 dBu ... - 8 dBu
	Max. level	- 8 dBu
Outputs per channel:	(0 dBu = 0,775 V)	
LINE OUT:	Balanced output (XLR) with isolation transformer,	
	output impedance	80 Ω
	CAL (IEC): für 514 nWb/m, 600 Ω	+ 6 dBu
	Adjustment range	-20...+15 dBu
	CAL (NAB): for OP level (0 VU), 600 Ω	+ 4 dBu
	Adjustment range	-20...+15 dBu
	UNCAL: possible increase +10 dB each.	
Max. level:	into 600 Ω	+22 dBu
	into 200 Ω	+20 dBu
Phones:	Jack socket diam. 6.3 mm, short-circuit-proof	
Output voltage:	at 514 nWb/m	max. 5.6 V
	for 0 VU	2.8 V
	Output impedance:	220 Ω
Monitor:	8-pin DIN socket	
Output voltage:	at 514 nWb/m	max. 1.8 V
	for external supply	+ 24 V
	Output impedance:	4.7 kΩ
RS-232:	7 pin DIN socket, serial interface with 9600 baud, 24 V supply for manual remote control or external locator. für Handfernbedienung oder externen Locator. Full-duplex, 3-wire connection (GND, Tx, Rx), 1 start bit, 1 stop bit, 8 data bits, no patity, software handshaking (Xon / Xoff).	
Fader/Sync:	8 pin DIN socket for fader start and synchronization of the capstan motor. Connection for data soundhead.	
Power inlet:	3-poles with protective ground	
Power requirements:	(voltage selector)	
	100, 120, 140, 200, 220, 240 V AC	50 ... 60 Hz
Power consumption:	max. 125 W	
Power fuse:	100 ... 140 V:T 2,5 A / 250 V (SLOW)	
	200 ... 240 V:T 1,25A / 250 V (SLOW)	

Operating conditions:	ambient air temperature	+10°C ...+40°C
	relative humidity (DIN 40040)	Category F
Operating position:	any position between horizontal and vertical	
Weight:	Including rack brackets	23 kg
External dimensions:	including rack brackets (W·H·DT)	482·443·202 mm
	without rack brackets	434·443·202 mm
	Installation width including rack brackets	442 mm

$^1/_4$-Track Variant:

Unweighted rumble:	(with Tape)	
		linear / A-weighted IEC179
IEC-Version:	9,5 cm/s (400 nWb/m)	> 52 dB / 57 dB
4 Track	19 cm/s (514 nWb/m)	> 54 dB / 60 dB
	38 cm/s (514 nWb/m)	> 55 dB / 61 dB
		linear / A-weighted IEC179
NAB-Version:	9,5 cm/s (400 nWb/m)	> 52 dB / 57 dB
4 Track	19 cm/s (514 nWb/m)	> 56 dB / 61 dB
	38 cm/s (514 nWb/m)	> 55 dB / 60 dB

MONO - Variant:	Level adjustments	NAB	IEC
	Input-Output Line:		
	Input	1,23V/+4dBu	1,55V/+6dBu
	Monitor	0,39V/-6dBu	0,775V/0dBu
	Output	1,23V/+4dBu	1,55V/+6dBu
	Reproduce (Test - Tape):	3,75 7,5 15ips	9,5 19 38cm
	Tape flux nWb/m	200 200 200	250 320 320
	Monitor	0,39V/-6dBu	0,775V/0dBu
	Output	1,23V/+4dBu	1,55V/+6dBu
	VU - Meter Ind.	0VU	+6VU
	Record level-adjustment by line:		
	Input-Tape-Output	1,23V/+4dBu	1,55V/+6dBu
	0VU-Display by line:		
	Input/Output	1,23V/+4dBu	0,775V/0dBu
	Adjustment of the Peak LED by line input:		
	LED +6 dB	2,45V/+10dBu	1,55V/+6dBu
	LED +9 dB	3,46V/+13dBu	2,18V/+9dBu
	LED +12dB	4,90V/+16dBu	3,1V/+12dBu

Subject to change

FRANCAIS

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1. GENERALITES

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1.1 RACCORDEMENT AU RESAU

Contrôler la valeur réglée au sélecteur de tension qui doit correspondre à la tension du réseau local.

Autrement, le sélecteur de tension doit être réglé en conséquence et la valeur du fusible primaire contrôlée.

Fusible:

100...140 V AC: T 2,5 A / 250V (retardé)

200...240 V AC: T 1,25A / 250V (retardé)

1.2 ELEMENTS DE COMMANDE

ELEMENT	FONCTION
[1] POWER:	Interrupteur principal mettant l'appareil sous tension et hors tension.
[2]:	Plateau gauche, moteur dérouleur.
[3]:	Plateau droit, moteur enrouleur.
[4]:	Galet pour compteur en temps réel.
[5]:	Barrière lumineuse pour la détection du début de bande transparent ou d'une rupture de bande.
[6]:	Levier palpeur contrôlant la tension de bande.
[7]:	Compteur en temps réel avec affichage du temps effectif de reproduction en heures, minutes et secondes ainsi que des paramètres du système.
[8] SEL:	Touche de sélection affichant le contenu de l'adress-Locator, sélectionnant un chiffre de l'affichage pour le changement au moyen de la touche STEP [9].
[9] STEP:	Touche modifiant pas à pas le chiffre d'affichage sélectionné par SEL [8].
[10] TRANS:	Touche de mémorisation de la position de bande affichée au compteur à temps réel dans l'adress-Locator (A-LOC). La valeur affichée peut être modifiée au préalable avec les touches SEL [8] et STEP [9].
[11] SEARCH:	Positionne la bande sur une adresse affichée avec les touches SEL [8] et STEP [9] sans surimprimer l'adress-Locator (A-LOC) avec la nouvelle adresse.
[12] RESET:	Touche de remise à zéro, mettant le compteur en temps réel à zéro (00.00.00).
[13] Z-LOC:	Zero-Locator, positionnant la bande sur l'adresse de bande 00.00.00. La reproduction peut être présélectionnée.
[14] A-LOC:	Address Locator positionnant la bande sur l'adresse mémorisée dans A-LOC avec la touche TRANS [10]. La reproduction peut être présélectionnée.
[15] LOOP:	Active le mode continu. L'appareil reproduit toujours à nouveau la partie de bande entre l'adresse 00.00.00 et l'adresse dans le A-LOC. Cette dernière peut également être négative. La fonction est interrompue en pressant à nouveau la touche LOOP ou une des touches de mécanisme.

[16] T-DUMP:	Enclenche et déclenche le mode "corbeille à papier" (Tape Dump). Le moteur droit est coupé; la fonction PLAY [20] permet de reproduire dans la "corbeille à papier" les parties de bande non utilisées.
[17] EDIT:	Enclenche et déclenche le mode d'édition. En tournant le plateau droit ou avec les touches « [18] ou » [19] on peut déplacer la bande en avant et en arrière pour trouver un passage donné, le circuit de reproduction étant ouvert.
[18] «:	Touche de rebobinage rapide de la bande. La bande est enroulée sur le plateau gauche.
[19] »:	Touche d'avance rapide de la bande. La bande est enroulée sur le plateau droit.
[20] PLAY:	Touche de reproduction de la bande. Actionnée avec la touche REC [22], elle initialise l'enregistrement.
[21] STOP:	En pressant cette touche, on interrompt toutes les fonctions du mécanisme et tous les modes sélectionnés sauf le mode "corbeille à papier".
[22] REC:	Actionnée avec la touche PLAY [20], cette touche met l'appareil en mode d'enregistrement. Avec le canal ou les canaux sur READY, on peut faire des enregistrements.
[23]:	VU-mètre pour l'affichage de modulation du canal 1 (gauche) avec trois affichages de crête LED pour +6, +9 et +12 dB.
[24] READY:	Canal 1 (gauche) prêt à l'enregistrement, la LED rouge au-dessus de la touche clignote. Pendant un enregistrement, sous l'action des touches REC [22] et PLAY [20], la LED s'allume en permanence.
[25] INPUT:	Sélecteur d'entrée. Sur le VU-mètre [23], le signal d'entrée est affiché et il peut être entendu sur les sorties.
[26] SYNC:	Sélecteur de sortie. La reproduction se fait depuis la tête d'enregistrement avec courbe de réponse de reproduction réduite. Cela permet l'enregistrement synchrone du canal 2 par rapport à un enregistrement existant sur le canal 1.
[27] REPRO:	Sélecteur de sortie. La reproduction se fait depuis la tête de reproduction. Cette fonction peut également être activée pendant un enregistrement afin de contrôler constamment la qualité de l'enregistrement (contrôle après bande). Le VU-mètre [23] et les sorties moniteur ont également le signal de la tête de reproduction.
[28] INPUT CH 1:	Réglage de niveau d'entrée pour canal 1. Influence en position UNCAL [30] le niveau d'enregistrement (modulation) du canal 1.
[29] MIC:	Sélecteur d'entrée. Active l'enregistrement par microphone (sur les deux canaux). Cette fonction ne peut être appelée que lorsque l'appareil a été équipé de l'option MIC/LINE SWITCH BOARD.
[30] UNCAL:	Active l'enregistrement non calibré. Le niveau d'enregistrement peut être réglé par INPUT CH 1 [28] et INPUT CH 2 [37]. Ce mode est activé automatiquement par le sélecteur d'entrée MIC [29].
[31] LINE.	Sélecteur d'entrée. Active l'enregistrement par les entrées LINE INPUT CH1 et LINE INPUT CH 2. Dans ce mode, on peut opérer à niveau calibré ou non calibré (UNCAL [30]).
[32]:	VU-mètre pour l'affichage de modulation du canal 1 (gauche) avec trois affichages de crête LED pour +6, +9 et +12 dB.
[33] READY:	Canal 1 (gauche) prêt à l'enregistrement, la LED rouge au-dessus de la touche clignote. Pendant un enregistrement, sous l'action des touches REC [22] et PLAY [20], la LED s'allume en permanence.
[34] INPUT:	Sélecteur d'entrée. Sur le VU-mètre [23], le signal d'entrée est affiché et il peut être entendu sur les sorties.
[35] SYNC:	Sélecteur de sortie. La reproduction se fait depuis la tête d'enregistrement avec courbe de réponse de reproduction réduite. Cela permet l'enregistrement synchrone du canal 1 par rapport à un enregistrement existant sur le canal 2.
[36] REPRO:	Sélecteur de sortie. La reproduction se fait depuis la tête de reproduction. Cette fonction peut également être activée pendant un enregistrement afin de contrôler constamment la qualité de l'enregistrement (contrôle après bande). Le VU-mètre [23] et les sorties ont également le signal de la tête de reproduction.

[37] INPUT CH 1:	Réglage de niveau d'entrée pour canal 1. Influence en position UNCAL [30] le niveau d'enregistrement (modulation) du canal 1.
[38] OUTPUT CH 1/2:	Réglage de niveau de sortie pour canal 1 (bouton intérieur) et canal 2 (anneau extérieur). En position UNCAL [39] de l'amplificateur de reproduction, ces potentiomètres permettent de régler les sorties LINE OUTPUT CH1 et LINE OUTPUT CH2.
[39] UNCAL:	Active le mode de reproduction non calibrée. Le niveau de sortie peut être réglé par les potentiomètres OUTPUT CH 1 et OUTPUT CH 2 [38].
[40] SLOW:	Commute sur la plus basse (plus lente) des deux vitesses de bande disponibles. En pressant plus longuement, on affiche la vitesse nominale à l'affichage [7] en unités "ips" (Inch par seconde).
[41] FAST:	Commute sur la vitesse plus élevée (plus rapide) des deux vitesses de bande disponibles. En pressant plus longuement, on affiche la vitesse nominale à l'affichage [7] en unités "ips" (Inch par seconde).
[42] VARIABLE:	Commute en mode "Varispeed" (vitesse variable de défilement de bande). Le potentiomètre SPEED DEVIATION [43] permet de faire varier la vitesse de bande.
[43] SPEED DEVIATION:	Potentiomètre de réglage continu de la vitesse de bande en mode "Varispeed" (touche VARIABLE [42]) dans une plage de -33% à +50% de la vitesse nominale choisie.
[44] SELECTOR	Sélecteur de moniteur. Influence la reproduction par le haut-parleur moniteur et par la prise moniteur. Les sorties LINE OUTPUT CH 1 et LINE OUTPUT CH 2 ne sont pas influencées.
[45] PHONES:	Prise pour casque. En enfichant un casque, on coupe le haut-parleur moniteur incorporé.
[46] VOLUME:	Réglage de volume. Modifie le volume du haut-parleur moniteur incorporé ainsi que de la sortie casque. En tirant le bouton, on enclenche le moniteur, on le déclenche à nouveau en enfonçant le bouton.
[47]:	Galet presseur. Pressant la bande sur l'axe de cabestan. Un état impeccable de ce galet (propreté, pas de dommages) donne un défilement optimal de la bande.
[48]:	Coupe-bande et rail de collage. Permet de couper et de recoller la bande commodément et proprement.
[49]:	Repère de coupe. Si la bande est saisie en cet endroit et introduite dans le rail de collage [48] de manière que l'endroit auquel se trouvait le repère coïncide avec le côté droit du boîtier, l'endroit de bande qui se trouvait précédemment devant l'entrefer de la tête de reproduction se trouve exactement sous le coupe-bande.
[50]	Vis de fixation du panneau frontal de commande.

1.3 PANNEAU DE RACCORDEMENT

RACCORDEMENT	FONCTION
[51] LINE OUTPUT CH 2:	Sortie pour canal 2. Le niveau de sortie peut être réglé en position UNCAL [39] au moyen du potentiomètre OUTPUT CH 1/2 [38].
[52] LINE OUTPUT CH 1:	Sortie pour canal 1. Le niveau de sortie peut être réglé en position UNCAL [39] au moyen du potentiomètre OUTPUT CH 1/2 [38].
[53] MONITOR:	Sortie pour amplificateur moniteur supplémentaire avec haut-parleurs.
[54] FADER/SYNC FREE HEAD:	Entrée pour un signal TTL (0 V, +5 V) pour commande externe de la vitesse de bande dans la plage de -33% à +50%. Fréquence de commande de vitesse nominale: 9,6 kHz. • Entrée Fader-Start • Connexion Free-Head
[55] RS 232:	Raccord sériel de commande (RS 232, 9600 Baud) pour raccordement à un PC.
[56] LINE INPUT CH 2:	Entrée de ligne canal 2, (XLR, symétrique) pour le raccordement d'une source de signal (amplificateur, régie).
[57] LINE INPUT CH 1:	Entrée de ligne canal 1, (XLR, symétrique) pour le raccordement d'une source de signal (amplificateur, régie).
[58] MIC INPUT CH 2:	Entrée micro canal 2 (XLR, symétrique).
[59] MIC INPUT CH 1:	Entrée micro canal 1 (XLR, symétrique).
[60] AC POWER:	Raccord de tension de réseau et sélecteur de tension.

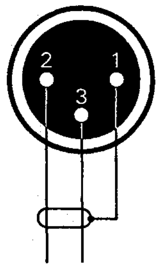
1.4 PIN ASSIGNMENT

XLR sockets, IEC 268-14

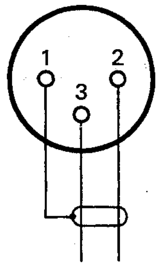
1 Audio ground
2 A-line (hot) *
3 B-line (cold)

* The A-line is hot when the wiring of the XLR sockets is unbalanced.

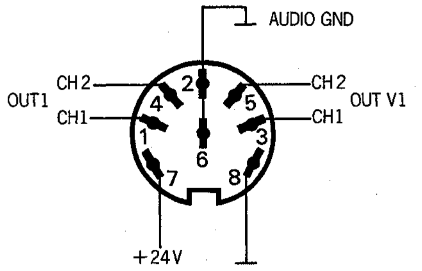
XLR IN [58] [59]



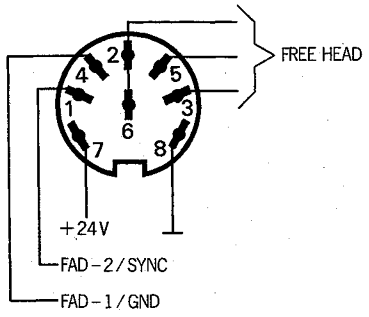
XLR OUT [51] [52]



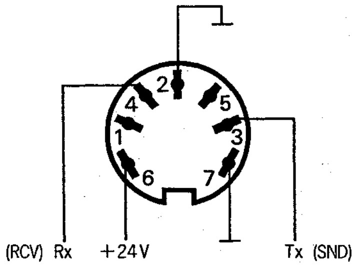
MONITOR [53]

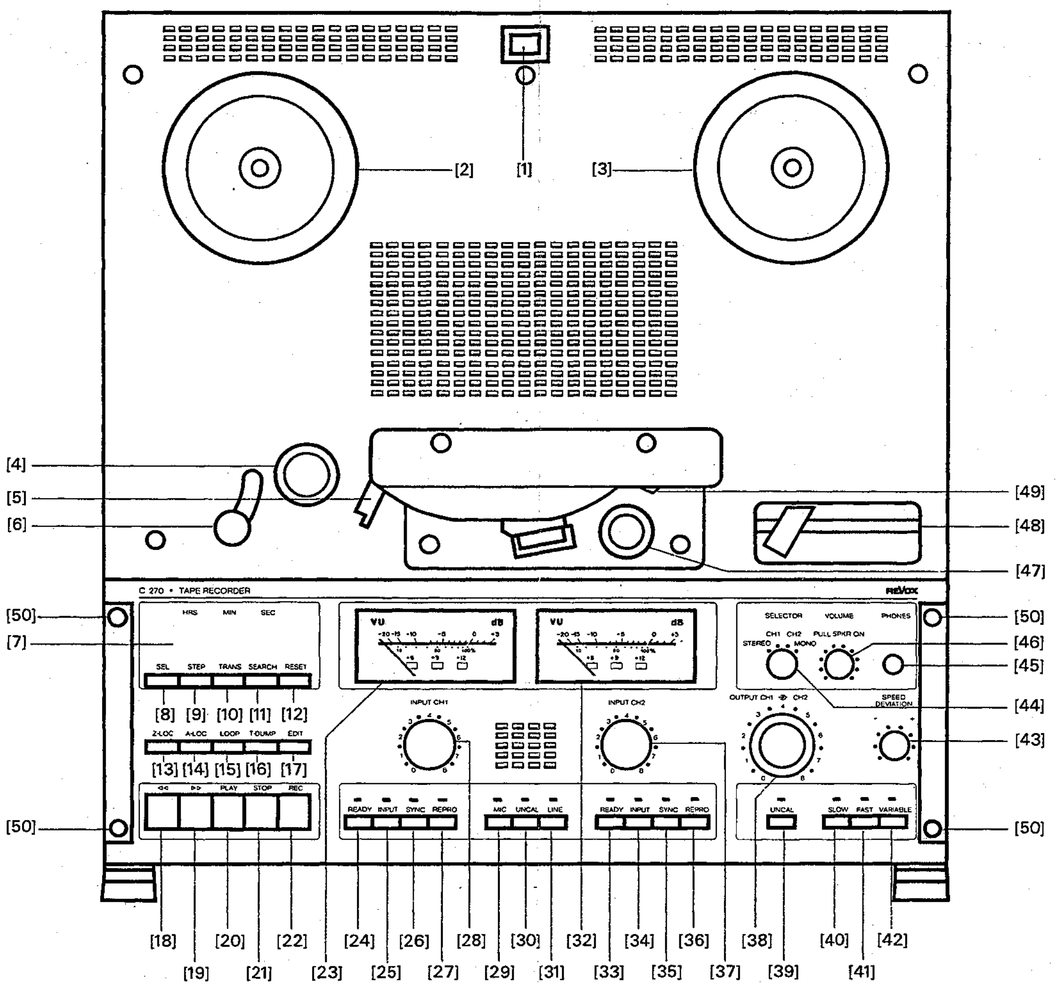

AUDIO GND
OUT1
CH2
CH1
CH2
CH1
OUT V1
2
4
5
1
3
6
7
8
+24V

FADER/SYNC [54]
FREE HEAD


FREE HEAD
2
4
5
1
3
6
7
8
+24V
FAD-2/SYNC
FAD-1/GND

RS-232 [55]


2
4
5
1
3
6
7
(RCV) Rx
+24V
Tx (SND)


[1]
[2]
[3]
[4]
[5]
[6]
[49]
[48]
[47]
C 270 • TAPE RECORDER
REVOX
[50]
[7]
HRS
MIN
SEC
SEL
STEP
TRANS
SEARCH
RESET
[8]
[9]
[10]
[11]
[12]
Z-LOC
A-LOC
LOOP
T-DUMP
EDIT
[13]
[14]
[15]
[16]
[17]
PLAY
STOP
REC
VU
dB
INPUT CH1
INPUT CH2
READY
INPUT
SYNC
REPRO
MIC
UNCAL
LINE
SELECTOR
VOLUME
PHONES
CH1
CH2
PULL SPKR ON
STEREO
MONO
OUTPUT CH1
CH2
SPEED DEVIATION
UNCAL
SLOW
FAST
VARIABLE
[50]
[46]
[45]
[44]
[43]
[50]
[50]
[18]
[19]
[20]
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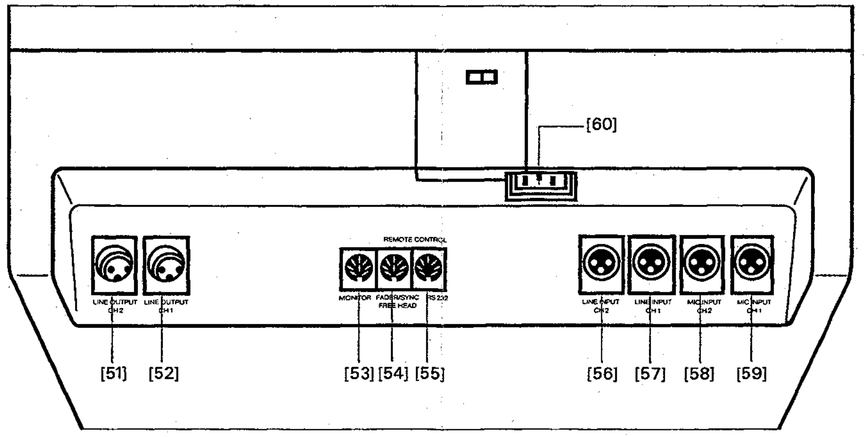
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REMOTE CONTROL
LINE OUTPUT CH2
LINE OUTPUT CH1
MONITOR
FADER/SYNC FREE HEAD
RS 232
LINE INPUT CH2
LINE INPUT CH1
MIC INPUT CH2
MIC INPUT CH1
[51]
[52]
[53]
[54]
[55]
[56]
[57]
[58]
[59]

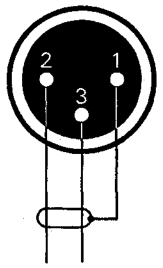
1.4 CABLAGE DES PRISES

Prises XLR, IEC 268-14:

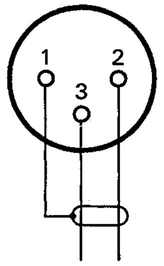
1 masse audio
2 ligne A (chaude)*
3 ligne B (froide)

* La ligne A est "chaude" lorsque les prises XLR sont câblées asymétriquement.

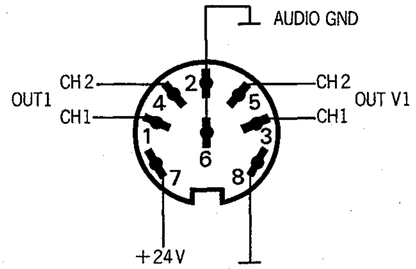
XLR IN [58] [59]



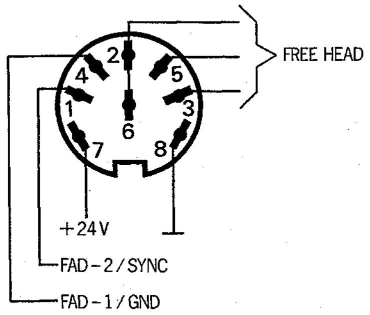
XLR OUT [51] [52]



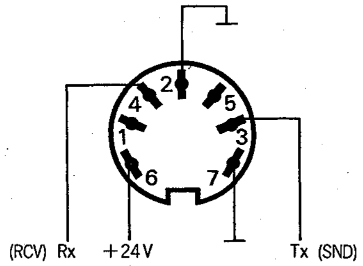
MONITOR [53]

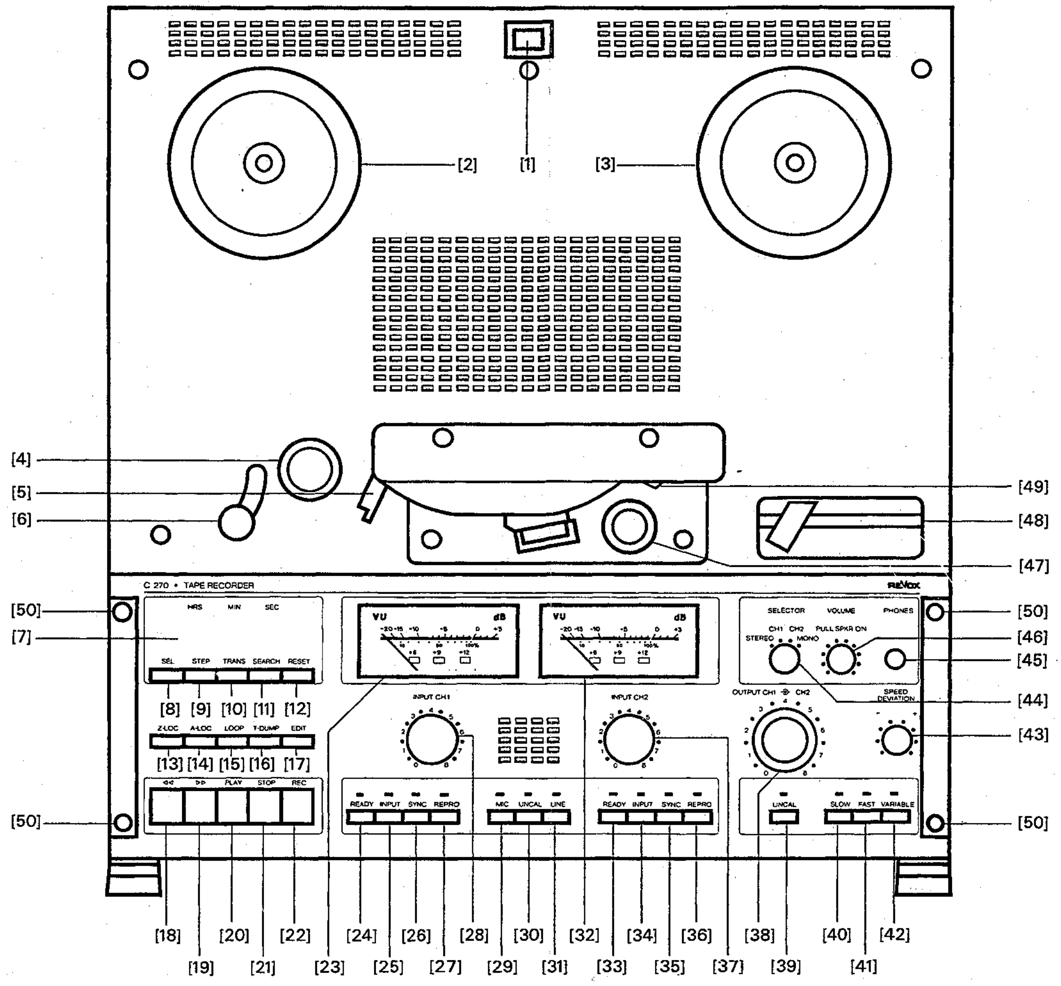

AUDIO GND
OUT1
CH 2
CH1
CH 2
CH1
OUT V1
1
2
3
4
5
6
7
8
+24V

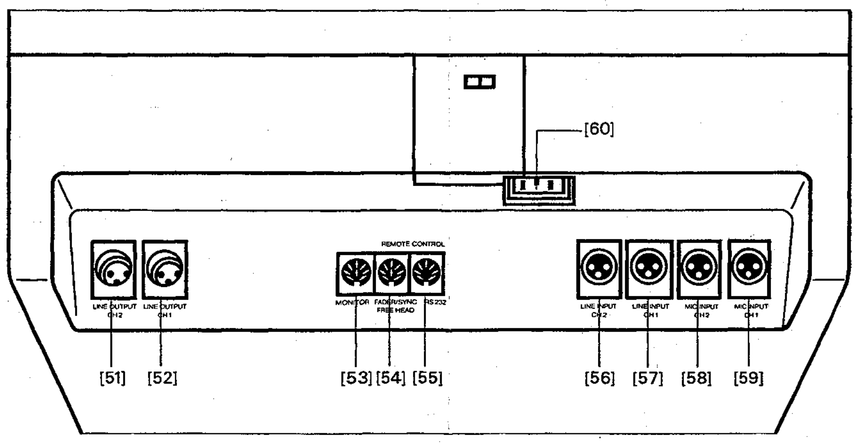
FADER/SYNC [54]
FREE HEAD


FREE HEAD
1
2
3
4
5
6
7
8
+24V
FAD - 2 / SYNC
FAD - 1 / GND

RS-232 [55]


1
2
3
4
5
6
7
(RCV) Rx
+24V
Tx (SND)


[1]
[2]
[3]
[4]
[5]
[6]
[7]
[8] [9] [10] [11] [12]
[13] [14] [15] [16] [17]
[18] [19] [20] [21] [22] [23] [24] [25] [26] [27] [28] [29] [30] [31] [32] [33] [34] [35] [36] [37] [38] [39] [40] [41] [42]
[43]
[44]
[45]
[46]
[47]
[48]
[49]
[50]
C 270 • TAPE RECORDER
REVOX
HRS MIN SEC
SEL STEP TRANS SEARCH RESET
Z-LOC A-LOC LOOP T-DUMP EDIT
PLAY STOP REC
VU dB
INPUT CH1
INPUT CH2
READY INPUT SYNC REPRO
MIC UNCAL LINE
SELECTOR VOLUME PHONES
STEREO MONO
OUTPUT CH1 CH2
SPEED DEVIATION
UNCAL
SLOW FAST VARIABLE


[60]
REMOTE CONTROL
LINE OUTPUT CH2
LINE OUTPUT CH1
MONITOR
FADER/SYNC FREE HEAD
RS 232
LINE INPUT CH2
LINE INPUT CH1
MIC INPUT CH2
MIC INPUT CH1
[51] [52]
[53] [54] [55]
[56] [57] [58] [59]

2. DEMONTAGE

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2.1 GENERALITES

Attention:
Avant de retirer des parties du boîtier et des ensembles électroniques, l'appareil doit être séparé du réseau!

Lors du montage et du démontage de composants électroniques, on observera les directives données au début du présent manuel concernant le maniement des composants MOS.

2.1.1 Lubrification

Tous les paliers sont graissés à vie et n'exigent aucun entretien. La lubrification des autres pièces glissantes est limitée à un minimum.

2.1.2 Outillage nécessaire

1 tournevis	grandeur 1
1 tournevis cruciforme	grandeur 1
1 tournevis cruciforme	grandeur 2
1 clé pour vis à six pans creux	grandeur 2,0
1 clé pour vis à six pans creux	grandeur 2,5
1 pince plate	
1 équipement de poste de travail "ESE" no. com.:	46200

Recommandation: Decouvrir le poste de travail pour éviter les égratignures sur l'appareil.

2.1.3 Assemblage

L'assemblage se fait en sens inverse des instructions de démontage ci-dessous, en tenant compte des indications de montage.

2.2 BOITIER

2.2.1 Boîtier

- Poser soigneusement le C270 sur la plaque frontale et desserrer des deux côtés 4 vis [1] du boîtier ou du support de bâti 19" ainsi que les 4 vis [2] des pieds du boîtier.
- Retirer le boîtier de l'appareil parallèlement.

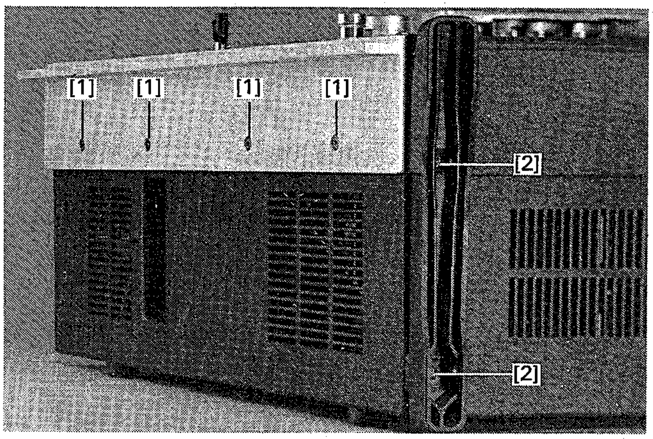


Fig. 1

Attention:
Les 2 pieds de l'appareil doivent être remontés après avoir retiré le boîtier (danger de basculement).

2.2.2 Couvercle de mécanisme

- Desserrer 2 vis [3] du coupe-bande et retirer celui-ci.
- Desserrer 2 vis [4] du couvercle de tête de lecture et les retirer.
- Desserrer 2 vis [5] et retirer la partie moulée.
- Desserrer les vis [6] et les vis à tête bombée [7] puis soulever le couvercle de mécanisme.

Indication de montage:
- Lors du montage, veiller à ce que le blindage sur la tête de lecture soit relevé.

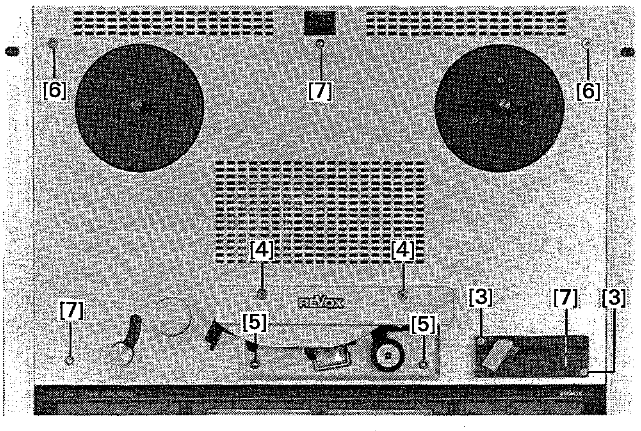


Fig. 2

2.3 UNITE DE COMMANDE

Remarque:

En desserrant les 4 vis [8] on peut relever l'unité de commande. Le guidage parallèle permet, en enfonçant contre l'appareil, de bloquer l'unité de commande selon fig. 3. Ainsi, l'accessibilité optimale est garantie pour les travaux de service.

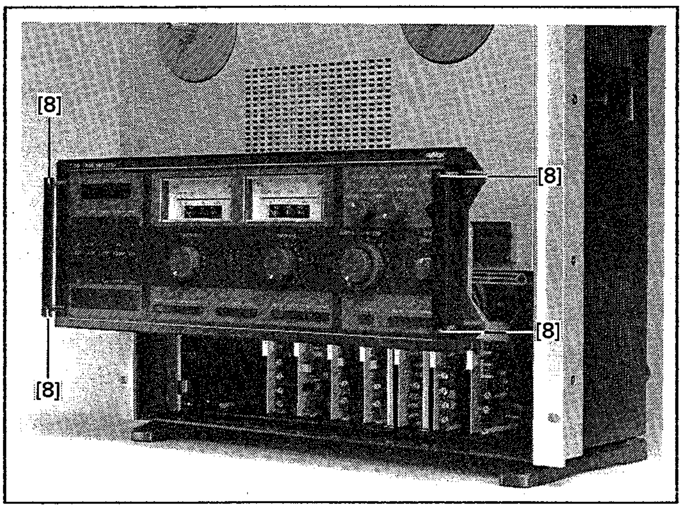


Fig. 3

- Retirer le boîtier (voir 2.2.1).
- Desserrer 4 vis [8] de l'unité de commande.
- Desserrer les 17 vis [9] de l'AUDIO BASIS BOARD. Sortir la platine d'environ 2 cm. Par la fente ainsi obtenue, on peut retirer les fiches codées [10, 11, 12] sur l'AUDIO BASIS BOARD. Il y a également une fiche sur le CONTROL BOARD 1.777.400 et une sur le CAPSTAN SERVO BOARD 1.777.410.
  Le câble vers le CAPSTAN SERVO BOARD a intérêt à être détaché près de l'unité de commande et pourvu au montage d'un raccord à borne.

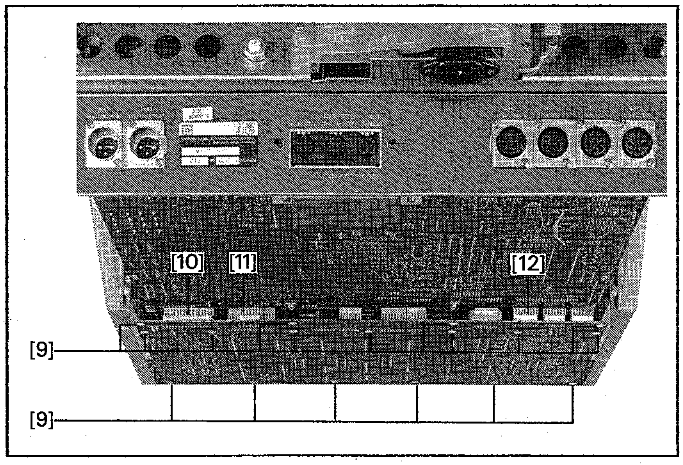


Fig. 4

- Détacher le câble de masse [13].
- Desserrer des deux côtés 2 vis [14] à la fixation de l'unité de commande, on peut ensuite soulever celle-ci du châssis.

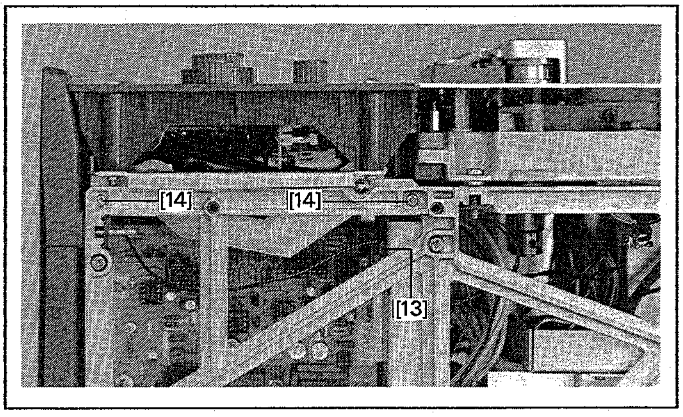


Fig. 5

- Desserrer les fixations de câbles qui deviennent alors visibles [15], sortir les câbles et retirer l'unité de commande.

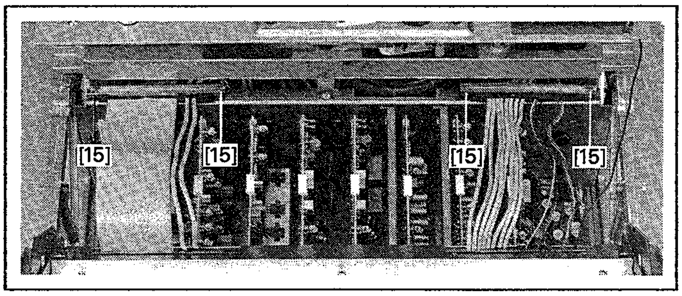


Fig. 6

2.3.1 VU-PEAK BOARD

- Sortir l'unité de commande (voir 2.3).
- Desserrer de chaque côté 4 vis [16] du panneau arrière de commande ainsi que les 4 vis [17] des deux traversées de câbles.
- Desserrer sur la face intérieure 1 vis [18] pour libérer les 3 câbles de masse.

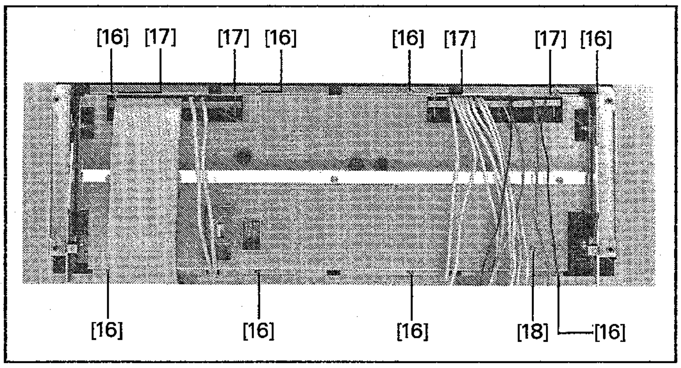


Fig. 7

- Desserrer 4 vis de fixation de platine [19] du VU-PEAK BOARD 1.777.460.
- Sortir successivement de leur position d'accrochage les 5 clavettes [20], en commençant par un côté, tandis que l'on soulève soigneusement le VU-PEAK BOARD.

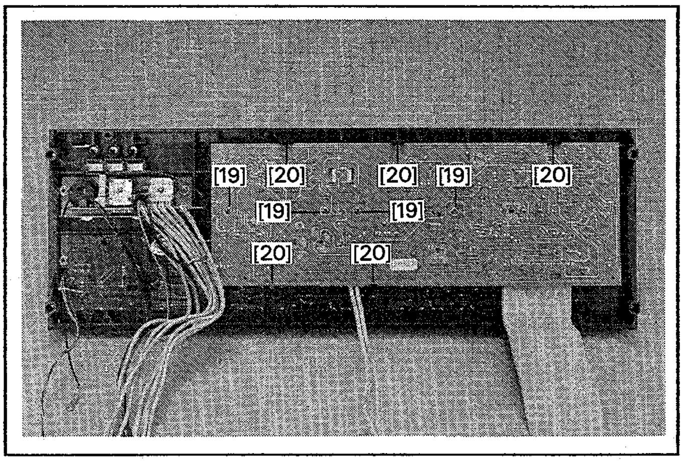


Fig. 8

2.3.2 KEYBOARD 1.777.450.00

- Sortir l'unité de commande (voir 2.3).
- Sortir le VU-PEAK BOARD (voir 2.3.1).
- Retirer tous les boutons de la plaque frontale. Attention: Pour le bouton "VOLUME", desserrer d'abord la vis sans tête.
- Desserrer les écrous de fixation des potentiomètres INPUT CH1, INPUT CH2 et OUTPUT CH1CH2.
- Desserrer 2 vis [21] (fig. 9).
- Sortir successivement les clavettes de leur position d'accrochage en commençant par un côté, tout en soulevant soigneusement le KEYBOARD. Le câble de masse maintenant libéré est simplement coincé sous le potentiomètre OUTPUT.

Indication de montage:

- Respecter impérativement le nombre de rondelles des vis [21]. Autrement, les vis transperceraient le boîtier en matière synthétique.

Attention:

Les touches de commande ne sont pas retenues dans la plaque frontale de commande et peuvent tomber si l'on retourne celle-ci.

2.3.3 AUDIO SWITCH BOARD 1.777.462

- Sortir l'unité de commande (voir 2.3).
- Sortir le VU-PEAK BOARD (voir 2.3.1).
- Sortir le KEYBOARD (voir 2.3.2)
- Desserrer 4 vis [22] et retirer les câbles du haut-parleur moniteur.

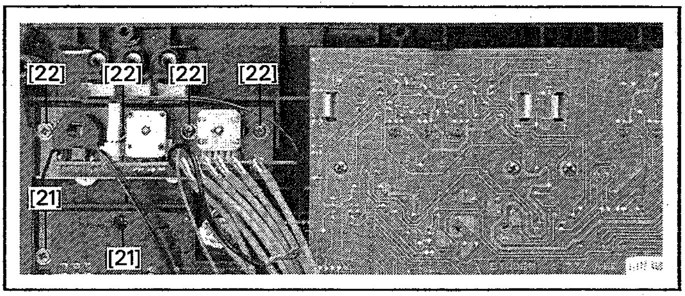


Fig. 9

Indication de montage:

- Respecter impérativement le nombre de rondelles des vis [22]. Autrement, les vis transperceraient le boîtier en matière synthétique.

2.3.4 LINE POTMETER OUTPUT 1.777.825.00

- Sortir l'unité de commande (voir 2.3).
- Desserrer 8 vis [16] (fig. 7) de la plaque arrière de l'unité de commande et retirer la plaque arrière.
- Retirer le double bouton rotatif de l'OUTPUT CH1CH2, desserrer l'écrou de fixation.
- Desserrer le câble, sortir LINE POTMETER OUTPUT.

2.3.5 WIRE HARNESS MONITOR 1.777.820.00

- Sortir l'unité de commande (voir 2.3).
- Sortir le VU-PEAK BOARD (voir 2.3.1).
- Sortir le KEYBOARD (voir 2.3.2).
- Décrocher l'étrier [23] du WIRE HARNESS MONITOR et retirer celui-ci.

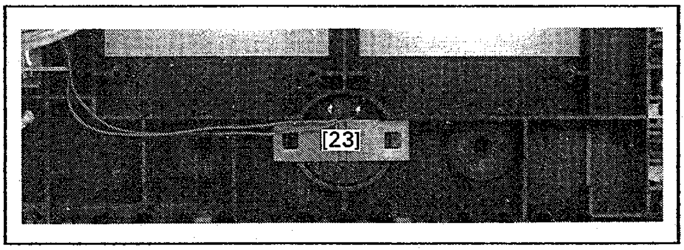


Fig. 10

2.4 ENSEMBLES ELECTRIQUES

2.4.1 CONTROL BOARD 1.777.400.22

- Retirer le boîtier (voir 2.2.1).
- Desserrer 9 vis [24] du CONTROL BOARD.

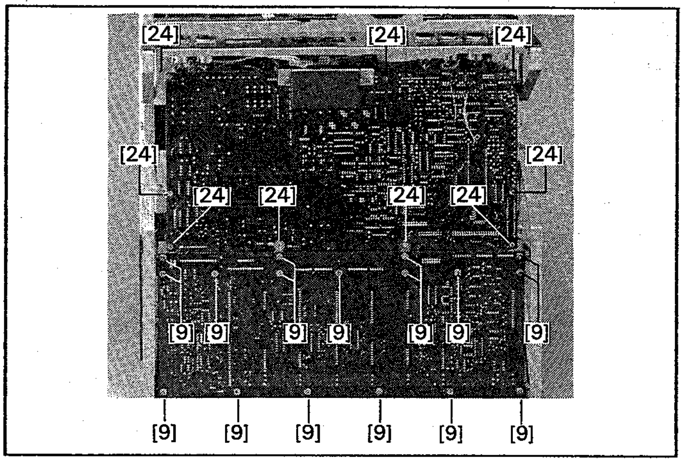


Fig. 11

- Soulever le CONTROL BOARD et détacher en même temps les 19 raccords à fiches sur la platine.

Indication de montage:
- Attention à la position correcte des commutateurs sur le DIL (SZ 1).

2.4.2 AUDIO BASIS BOARD 1.777.500.81

- Retirer les cartes enfichables (voir 2.5).
- Retirer le boîtier (voir 2.2.1).
- Desserrer 17 vis [9] sur l'AUDIO BASIS BOARD (voir fig. 11).
- Sortir la platine et détacher en même temps les 12 connexions à fiches.

2.4.3 CAPSTAN SERVO BOARD 1.777.410.20

- Retirer le boîtier (voir 2.2.1).
- Retirer le CONTROL BOARD (voir 2.4.1).
- Desserrer 4 vis [25].

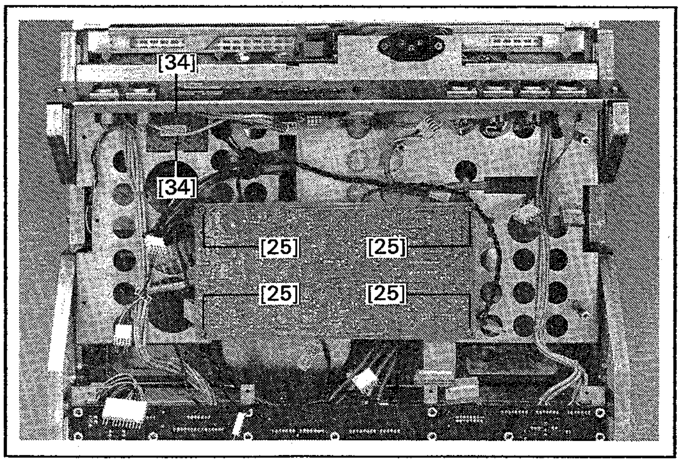


Fig. 12

- Soulever la platine et détacher en même temps les 3 connexions restantes (moteur de cabestan).

2.4.4 FAST START BOARD 1.777.414.00

- Retirer le boîtier (voir 2.2.1).
- Retirer le CONTROL BOARD (voir 2.4.1).
- Retirer le CAPSTAN SERVO BOARD (voir 2.4.3).
- L'ensemble placé sur le CAPSTAN SERVO BOARD peut être retiré en défaisant les connexions soudées et à câbles.

2.4.5 CONNECTION UNIT 1.777.830.00

- Retirer le boîtier (voir 2.2.1).
- Desserrer 2 vis [26].

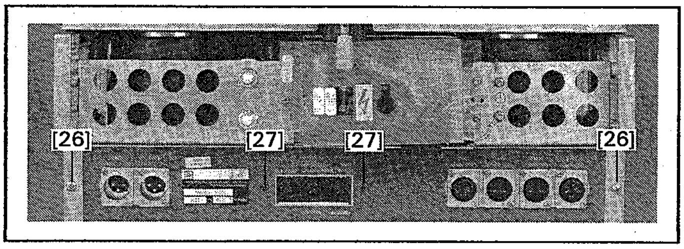


Fig. 13

- Retirer 2 fiches et les ligatures de câble sur le CONTROL BOARD.
- Retirer 3 fiches et les ligatures de câble sur l'AUDIO BASIS BOARD.
- Soulever la CONNECTION UNIT.

2.4.6 CONNECTION BOARD 1.777.441.00

- Retirer le boîtier (voir 2.2.1).
- Soulever la CONNECTION UNIT (voir 2.4.5).
- Détacher 2 fiches avec les ligatures de câble sur le CONTROL BOARD.
- Retirer la fiche de moniteur du CONNECTION BOARD.
- Desserrer 2 vis [27] (fig. 13) du CONNECTION BOARD.
- Retirer le CONNECTION BOARD.

2.4.7 MAINS TRANSFORMER 1.777.300.00

- Retirer le boîtier (voir 2.2.1).
- Retirer le CONTROL BOARD (voir 2.4.1).
- Retirer le CAPSTAN SERVO BOARD (voir 2.4.3)
- Retirer la CONNECTION UNIT (voir 2.4.5).
- Retirer le couvercle de mécanisme (voir 2.2.2).
- Desserrer 2 vis [28] du côté du mécanisme.

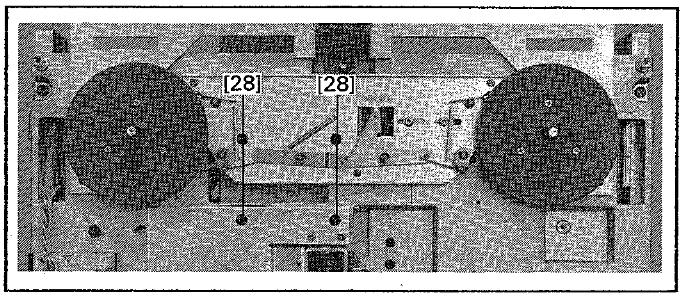


Fig. 14

- Desserrer 4 vis [29, 29a] de chaque côté.

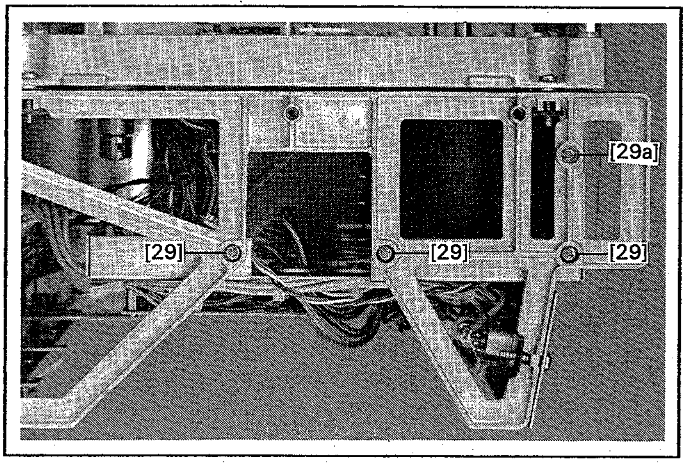


Fig. 15

- Détacher toutes les ligatures de câbles à la partie intermédiaire du châssis.
- Soulever légèrement l'interrupteur POWER et retirer en même temps la partie intermédiaire du châssis.
- Desserrer 2 vis [30] du couvercle en tôle.
- Desserrer 3 vis [31] du DISTRIBUTOR BOARD.

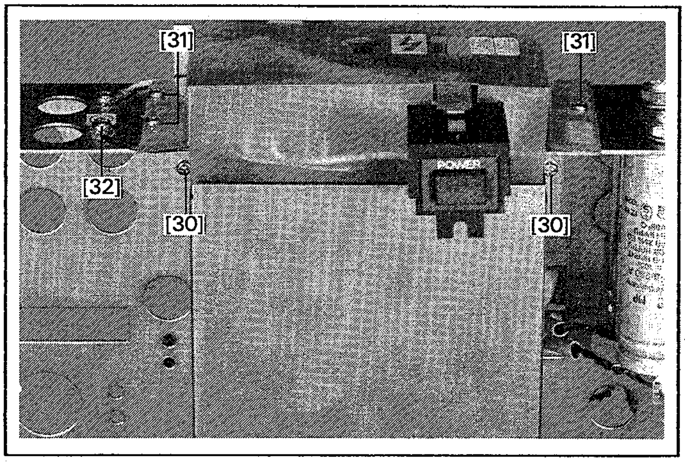


Fig. 16

- Retirer le câble de réseau de la fiche d'appareil ainsi que le câble de masse [32].
- Libérer le faisceau de câbles à 8 pôles.
- Retirer les 8 cosses-câbles du DISTRIBUTOR BOARD.

- Desserrer 4 vis [33].

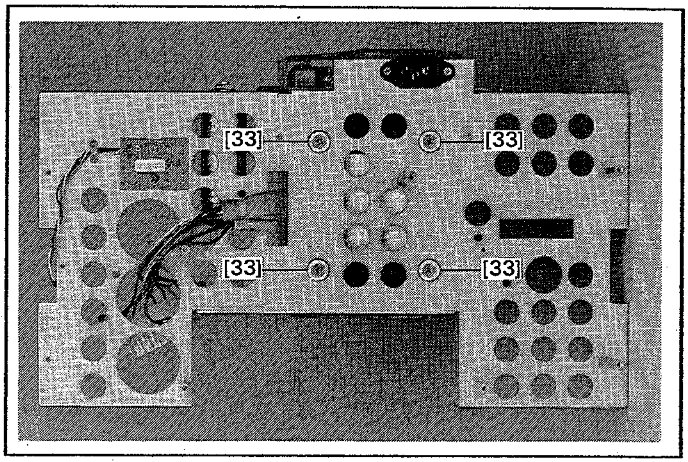


Fig. 17

- Sortir le MAINS TRANSFORMER.

Indications de montage:

- Les 2 vis [29a] en haut et devant sont plus petites que les vis [29].
- En remontant la partie intermédiaire du châssis, veiller à ce que le TACHO BOARD 1.777.250.00 soit aligné avec le générateur d'impulsions sur le moteur.

2.4.8 DISTRIBUTOR BOARD 1.777.320.00

- Retirer le boîtier (voir 2.2.1).
- Détacher la fixation de l'interrupteur POWER.
- Desserrer 3 vis de fixation de platine [31] (fig. 16).
- Retirer 8 fiches DISTRIBUTOR BOARD.
- Retirer le DISTRIBUTOR BOARD.

2.4.9 TACHO BOARD 1.777.250.00

- Retirer le boîtier (voir 2.2.1).
- Retirer le CONTROL BOARD (2.4.1).
- Retirer les 2 vis cruciformes [34] (fig. 12) du TACHO BOARD ainsi que la fiche de câble. Sortir la platine.

2.4.10 TENSION ARM BOARD 1.777.211.00

- Retirer le couvercle de mécanisme (voir 2.2.2).
- Desserrer 3 vis de fixation de platine [35] (fig. 18) ainsi que les fiches, sortir soigneusement le TENSION ARM BOARD.

NOTE:

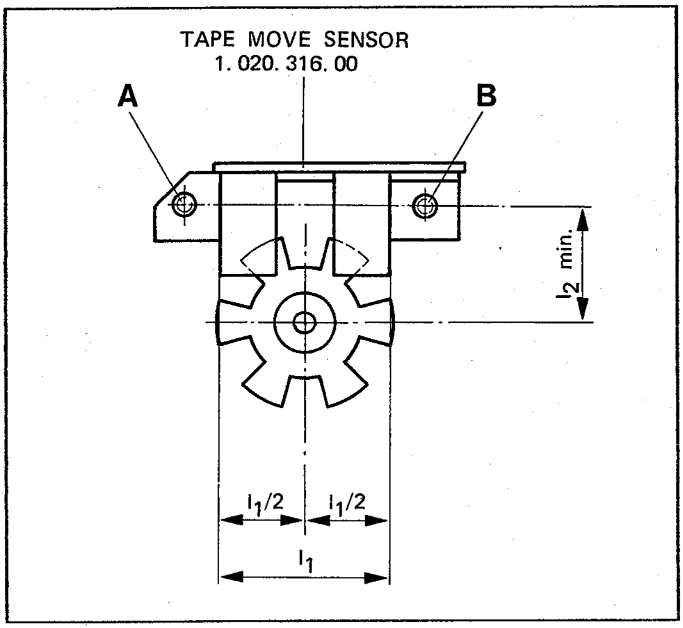
Ces appareils dont les palpeurs de bande sont modifiées, sont équipés d'une pièce d'ancrage de ressort (1.777.210.09) fixée au chassis par deux vis. Les Nos. des deux ressorts sont 1.010.134.37 (remplaçant le ressort actuel) et le nouveau, 1.077.100.13 .

2.4.11 TAPE MOVE SENSOR PCB 1.020.316.00

- Retirer le couvercle de mécanisme (voir 2.2.2).
- Retirer 1 vis [36] ainsi que 2 vis de support de platine et de galet [37] du TAPE MOVE SENSOR.
- Desserrer 2 vis [38] de la fixation de platine ainsi que la fiche de câble.
- Sortir le TAPE MOVE SENSOR.

Indications de montage:

Au moyen des vis cruciformes A et B, monter le TAPE MOVE SENSOR de manière que les conditions après le dessin ci-dessous soient remplies.



2.4.12 TAPE SENSOR BOARD 1.050.312.00

- Retirer le couvercle de mécanisme (voir 2.2.2).
- Desserrer 2 vis de fixation [39] et détacher la fiche de câble du TAPE SENSOR BOARD.
- Sortir le TAPE SENSOR BOARD.

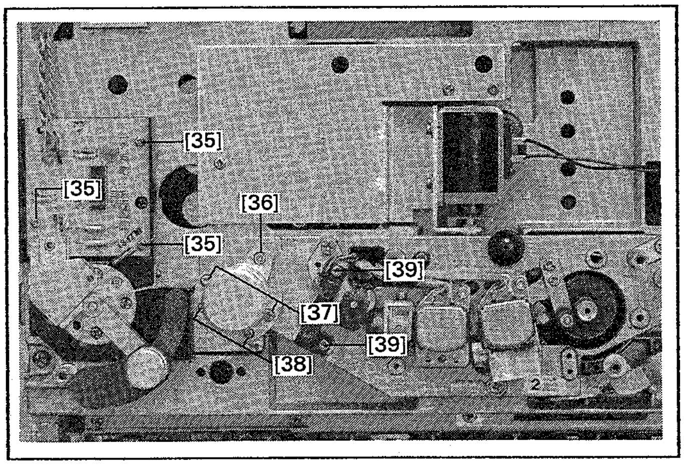
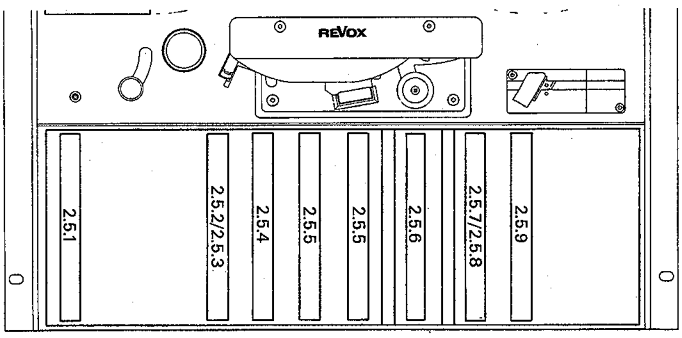


Fig. 18

2.5 CARTES ENFICHABLES

- Desserrer 4 vis [8] (fig. 3).
- Relever l'unité de commande
  Le guidage parallèle permet, en enfonçant contre l'appareil, de bloquer l'unité de commande selon la fig. 3. Cela donne une accessibilité optimale pour les travaux de service et de réparation sur les cartes enfichables.
- Détacher le rail de fixation.
- On peut désormais sortir une à une toutes les cartes enfichables selon la liste ci-dessous.

2.5.1 MIC-LINE-SWITCH BOARD 1.777.520.00 (Opt.)
2.5.2 RECORD EQUALIZER BOARD 1.777.540.00
2.5.3 RECORD SPEED BOARDS 1.777.550.00-.559.00
2.5.4 ERASE AMPLIFIER BOARD 1.777.560.00
2.5.5 BIAS AMPLIFIER BOARD 1.777.570.00
(2 unités)
2.5.6 PREAMPLIFIER BOARD 1.777.610.00
2.5.7 REPRODUCE EQUALIZER BOARD 1.777.620.00
2.5.8 REPRO SPEED BOARDS 1.777.630.00-.639.00
2.5.9 OUTPUT AMPLIFIER BOARD 1.777.640.00



2.6 ENSEMBLES MECANIQUES

2.6.1 Ensemble de frein

- Retirer le couvercle de mécanisme (voir 2.2.2).
- Détacher les plateaux à bobines, 3 vis chaque fois [40].
- Sur les deux tambours de frein, desserrer la vis centrale [41] (fig. 21). En pressant sur le noyau de plongeur de frein, desserrer les freins et soulever soigneusement les tambours avec les disques d'entraînement.

Attention:

Ne jamais plier les bandes de frein ni toucher les surfaces de freinage. Autrement, la conséquence serait une dégradation extrême de la performance de freinage.

- Retirer 2 raccords de câbles de l'aimant de frein [42].
- Desserrer 3 vis [43] du support de frein et soulever l'ensemble soigneusement.

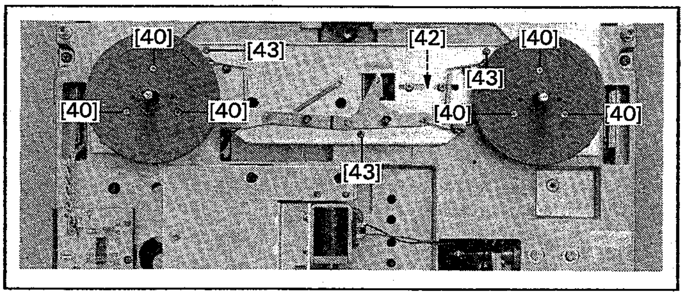


Fig. 19

2.6.2 Support de têtes

- Retirer le boîtier (voir 2.2.1).
- Retirer le couvercle de mouvement (voir 2.2.2).
- Retirer les fiches de TAPE MOVE SENSOR PCB, TAPE SENSOR BOARD (les deux fiches sur le CONTROL BOARD), la tête d'effacement [44], la tête d'enregistrement [45] et la tête de reproduction [46] (les trois fiches sur AUDIO BASIS BOARD).
- Desserrer 3 vis [47] sur le support de têtes et soulever celui-ci, l'axe [48] dépasse maintenant de cabestan et doit être traité avec beaucoup de soin.

Indication de montage:

- Lors de l'assemblage, rabattre le blindage [49] de la tête de reproduction [46] en avant et poser alors seulement le support de têtes.

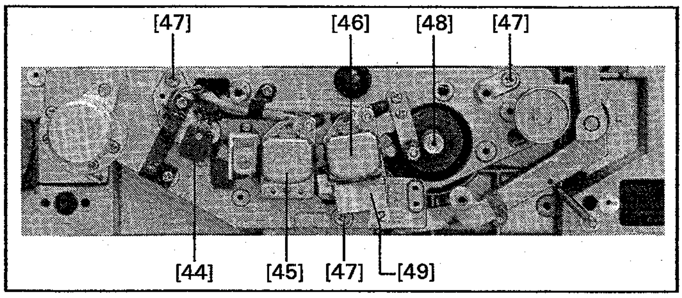


Fig. 20

2.6.3 Têtes magnétique

- Sortir le support de têtes (voir 2.6.2).
- Les têtes sont fixées sur le châssis support de têtes. Une fois celui-ci retiré, les têtes peuvent être desserrées avec la vis centrale.

Remarque:

S'il faut changer la tête d'enregistrement et de reproduction, il est préférable d'envoyer l'appareil au service REVOX le plus proche.

2.6.4 Moteur droit

- Démonter l'ensemble de freinage (voir 2.6.1).
- Retirer 4 vis [50] des deux tôles limitatrices.
- Retirer le CONTROL BOARD (voir 2.4.1).
- Retirer la CONNECTION UNIT (voir 2.4.5).
- Retirer les 3 autres fiches du CAPSTAN SERVO BOARD.
- Détacher toutes les ligatures de câbles de la partie intermédiaire de châssis.
- Desserrer 2 vis [28] sur le couvercle de châssis.
- Desserrer de chaque côté 4 vis [29, 29a] (fig. 15).

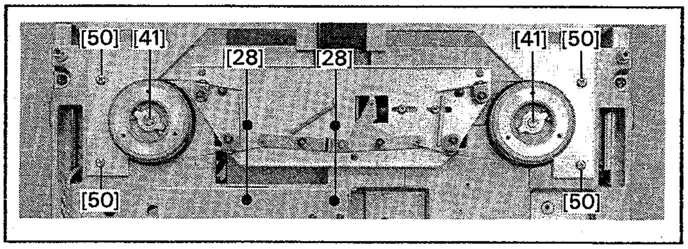


Fig. 21

- Soulever légèrement l'interrupteur POWER et retirer en même temps la partie intermédiaire de châssis.
- Desserrer 1 vis de la fixation de câble moteur [51] (fig. 24).
- Desserrer 3 vis de flasque de moteur enrouleur [52], maintenir en même temps le moteur d'une main et le sortir.

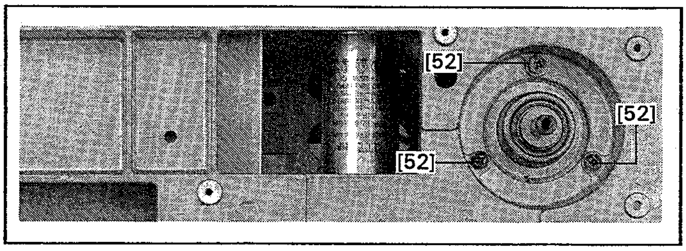


Fig. 22

Indications de montage:

- En montant la partie intermédiaire de châssis, veiller à ce que le TACHO BOARD 1.777.250.00 soit aligné avec la roue de tacho sur le moteur.
- Les 2 vis [29a] en haut en avant sont plus petites que les vis [29].

2.6.5 Moteur gauche

- Le démontage se fait de manière identique à celui du moteur droit, voir 2.6.4.

2.6.6 Paliers de moteurs

- Retirer les moteurs (voir 2.6.4).
- Retirer le circlip poli (B) et le circlip (C) au moyen de la pince à circlip. Le rotor doit être sorti vers le bas avec l'arbre.

Indications de montage:
- Le réglage de hauteur du galet de frein (plateau à bobine) se fait au moyen des rondelles d'écartement (D).
- Il faut veiller à ce que les rondelles (D) soient posées sur le même axe de moteur.
- Remplacer le circlip (B).
- Les roulements à billes des moteurs ne doivent être remplacés que par des pièces d'origine.

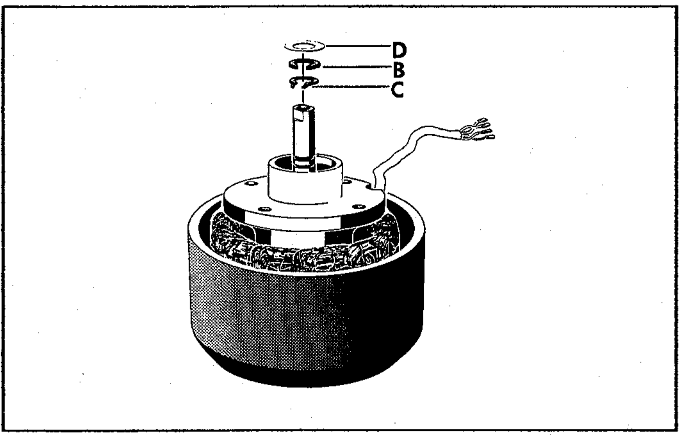


Fig. 23

2.6.7 Moteur de cabestan

- Retirer le boîtier (voir 2.2.1).
- Retirer le couvercle de mécanisme (voir 2.2.2).
- Démonter le support de têtes (voir 2.6.2).
- Retirer le CONTROL BOARD (voir 2.4.1).
- Desserrer 3 vis de flasque de moteur son [53] (fig. 25), maintenir en même temps le moteur d'une main et le sortir.

2.6.8 Aimant de pression, bras de pression

- Retirer le boîtier (voir 2.2.1).
- Retirer le couvercle de mécanisme (voir 2.2.2)
- Desserrer 3 vis [47] (fig. 20) du support de têtes.
- Libérer le câble [54] de l'aimant de pression.
- Desserrer 2 vis [55] (fig. 25) de la fixation de relais de pression et sortir le relais.
- Desserrer la vis sans tête [56] sur l'arbre de pression.

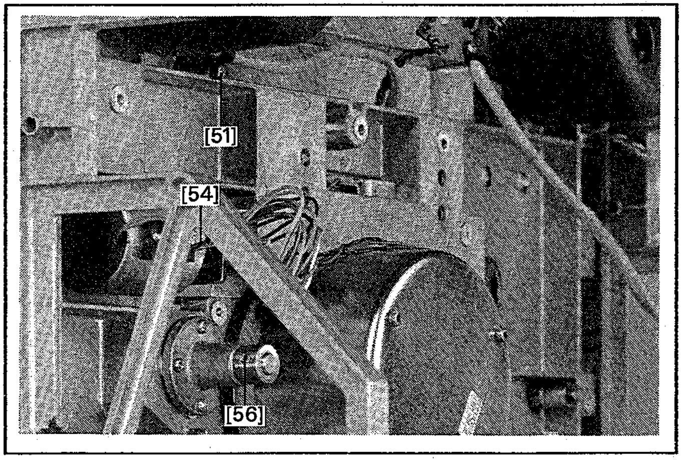


Fig. 24

- Sortir le bras de pression.

Indication de montage:
- Le jeu axial de l'arbre doit être de 0,4-1,0 mm.

2.6.9 Unité d'écortement de bande

- Retirer le boîtier (voir 2.2.1).
- Retirer le couvercle de mécanisme (voir 2.2.2).
- Démonter le support de têtes (voir 2.6.2).
- Desserrer 3 vis [57] de l'unité d'écartement de bande.
- Desserrer 3 vis [58] de la fixation d'aimant, et retirer le câble de liaison [59] vers l'aimant. Alors seulement on peut sortir toute l'unité d'écartement bande.

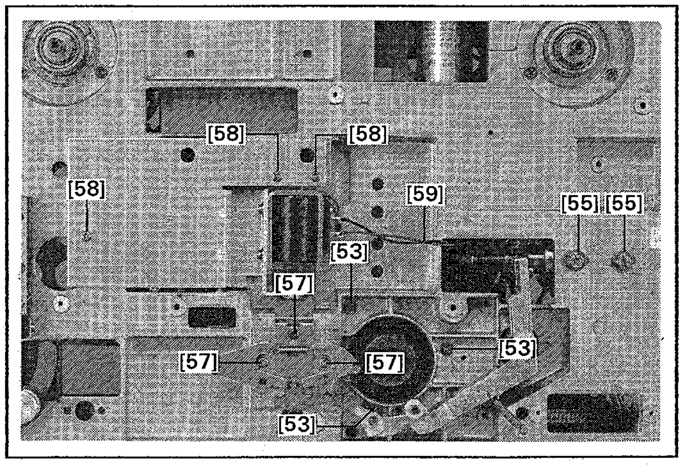


Fig. 25

3. FONCTIONNEMENT

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3.1 SYNOPTIQUE

Fonctionnellement parlant, on peut diviser le magnétophone C270 en deux parties: le mécanisme et le bloc audio.

Le mécanisme contient les ensembles fonctionnels suivants:
- Alimentation
- Microprocesseur
- Interface microprocesseur
- Palpeurs
- Réglage de moteur de cabestan, de moteurs enrouleurs et commande
- Clavier et interfaces vers l'extérieur.

Le bloc audio comprend les ensembles fonctionnels suivants:
- Amplificateur microphonique (option)
- Amplificateur d'entrée ligne
- Amplificateur d'enregistrement
- Amplificateur d'effacement et de prémagnétisation
- Préamplificateur et amplificateur synchro
- Amplificateur de reproduction et de sortie
- VU-mètre et affichage PEAK.

3.2 FONCTIONNEMENT DU MECANISME

3.2.1 DISTRIBUTOR BOARD 1.777.320.00

La prise d'entrée réseau est reliée directement au DISTRIBUTOR BOARD. La tension d'entrée passe par l'interrupteur unipolaire (S1), le fusible primaire (F1) et le filtre passe-bande (L1, C1, C2) vers le sélecteur de tension (S2).
La sortie du sélecteur de tension aboutit au côté primaire du transformateur réseau par l'intermédiaire de la fiche AMP et de fils souples.

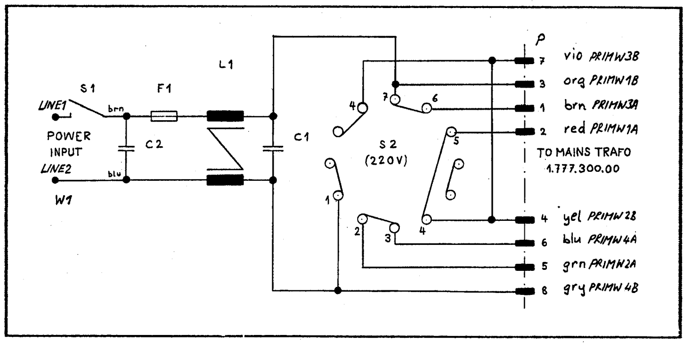

Fig. 1

3.2.2 CONTROL BOARD 1.777.400.22

Alimentation

Le circuit secondaire du transformateur réseau est relié au CONTROL BOARD par des fils souples et une fiche multiple (J15). Il fournit la tension d'entrée pour les alimentations suivantes:

- +15 V DC avec redresseur (DZ3) et régulateur de tension (IC23) pour audio et commande
- −15 V DC avec redresseur (DZ4) et régulateur de tension (IC24) pour audio et commande
- +36 V DC avec redresseur (DZ6), tension non stabilisée pour le moteur de cabestan
- +24 V DC avec redresseur (DZ5), tension non stabilisée pour les électro-aimants, la sortie moniteur et l'interface sérielle RS 232
- +5 V DC avec alimentation à découpage (IC25) à partir de laquelle la tension de +24 V DC est générée pour la logique et l'éclairage des instruments
- 125 V AC pour les moteurs enrouleurs

Toutes les tensions d'alimentation sont protégées par des fusibles du côté secondaire.

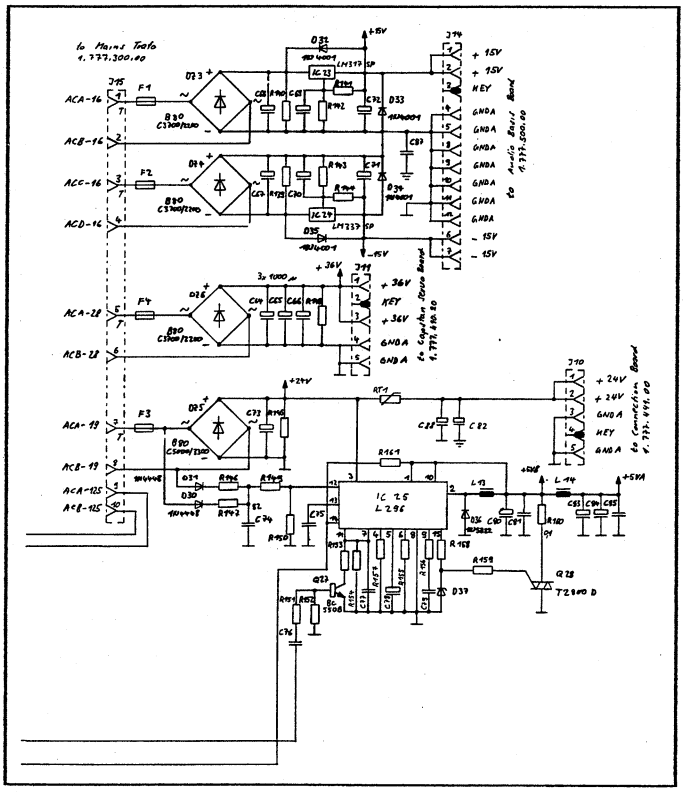

Fig. 2

Système processeur

Le système processeur se compose du processeur OPROM 637A01Y (IC6) avec EPROM 16K interne et RAM 192 octets. L'horloge de processeur est à fréquence de 1,2288 MHz. A partir de cette fréquence, les fréquences suivantes sont obtenues par division dans IC7:

- 153,6 kHz comme fréquence d'effacement et de prémagnétisation.
- 76,8 kHz pour l'alimentation à découpage +5 V et la modulation à largeur d'impulsions pour la commande des moteurs enrouleurs.
- 38,4 kHz pour la modulation à largeur d'impulsions du réglage de moteur de cabestan et de la fréquence de modulation du palpeur de bande.
- 9600 Hz comme référence tachymétrique de cabestan.

Paramètres de service

Les paramètres suivants peuvent être programmés par les commutateurs DIP à 8 bits (SZ1):

S2 ON = Auto-Rewind actif, programmable par touche Loop, fonction Loop non active
S2 OFF = Fonction Loop normale

S3 ON = Enroulement avec ménagements actif réglable pat potentiomètre (RA4)
S3 OFF = Pas d'enroulement avec ménagements

S4 ON / S5 ON = 9.5 cm/s resp. 19 cm/s de vitesse de défilement
S4 ON / S5 OFF = 9.5 cm/s resp. 38 cm/s de vitesse de défilement
S4 OFF / S5 ON = 19 cm/s resp. 38 cm/s de vitesse de défilement
S4 OFF / S5 OFF= 9.5 cm/s resp. 19 cm/s de vitesse de défilement

---

S6 ON = Option Mic présente
S6 OFF = Option Mic absente

S7 ON = Magnétophone standard
S7 OFF = Appareil de lecture seulement

S1 ON / S8 ON = Magnétophone en service normal
S1 ON / S8 OFF = Appareil actif

S1 OFF / S8 ON = Sync externe actif

Interfaces

Pour permettre la communication des données, le CONTROL BOARD est équipé des interfaces suivantes:

- **L'interface RS 232** (entrée et sortie sérielle) est utilisée à 9600 Baud.
  Circuit d'entrée (RCV): transistor (Q5), fiche (P2), câble plat, CONNECTION BOARD.
  Circuit de sortie (SND): IC 1, fiche (P2), câble plat, CONNECTION BOARD.
- **Entrée Fader Start**
  Circuit (FADER): optocoupleur (DLQ1), fiche (P2), câble plat, CONNECTION BOARD.
- **Entrée tacho**
  Circuit (TACHO): prise (J4), câble souple, TACHO BOARD.
- **Galet de comptage entrée**
  Circuit (MOVE C): prise (J12), câble souple, TAPE MOVE SENSOR.
- **Entrée Band Sensor**
  Circuit: prise (J5), câble souple, TAPE SENSOR BOARD
- **Levier palpeur entrée et sortie Sensor**
  Circuit (ATENS): prise (J13), câble souple, TENSION ARM BOARD.
- **Entrée et sortie vers la partie frontale de commande**
  Circuit (KBD): prise (P4), câble plat, VU-PEAK BOARD, KEYBOARD.
- **Sortie de commande vers le bloc audio**
  Circuit: prise (P1), câble plat, AUDIO BASIS BOARD.
- **Sortie de commande vers la commande de moteur de cabestan**
  Circuit (S CAP): prise (P3), câble plat, CAPSTAN SERVO BOARD.

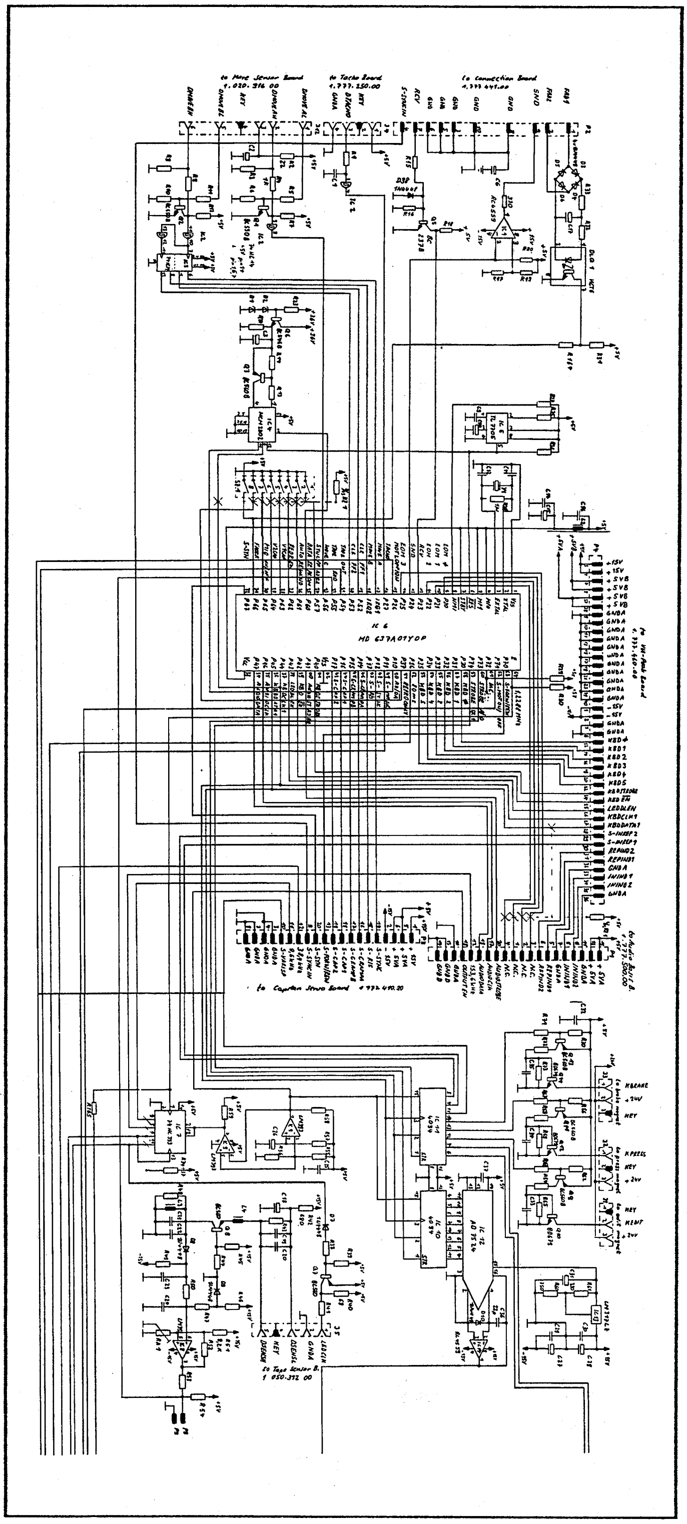
IC 6
HD 6373A0YOP
to Capstan Servo Board
to Tape Sensor B.
AD 7524

Fig. 3

Commande des électro-aimant de freinage, de pression et d'édition:

L'instruction de commande des électro-aimants passe par le bus sériel du processeur (IC 6) au registre à décalage (IC 11) qui commande les circuits d'attaque (Q9/Q10, Q11/Q12, Q13/Q14). La liaison vers les électro-aimants est garantie par des fils souples sur les prises (J1, J2 et J3).

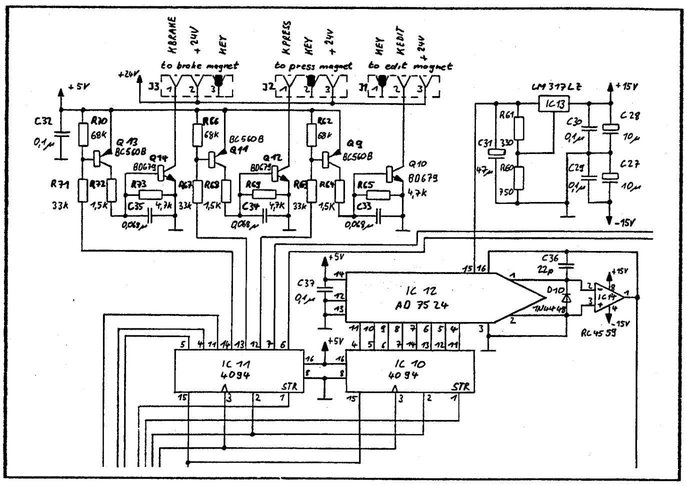
to brake magnet
to press magnet
to edit magnet
KBRAKE
KPRESS
KEDIT
KEY
+24V
+5V
+15V
-15V
LM317LZ
IC13
Q13 BC560B
Q14 BD679
Q11 BC560B
Q12 BD679
Q9 BC560B
Q10 BD679
IC 12
AD 7524
IC 11
4094
IC 10
4094
STR
RC4559
C36 22p

Fig. 4

Commande des moteurs enrouleurs

Les moteurs enrouleurs sont commandés différemment suivant le mode de service. Le processeur détermine la variante nécessaire dans chaque cas et les active par le commutateur (IC16).

- Le processeur calcule, à partir de la vitesse de défilement de bande et de la vitesse de rotation du moteur droit, la tension correcte de bande pour le moteur enrouleur.
  Circuit: processeur IC6 (fig. 3), bus sériel (KBD-DATA1), registre à décalage IC10 (fig. 3), convertisseur N/A IC12 (fig. 3).
- Le moteur entraîné est toujours réglé par le signal du tendeur de bande (ATENS/J13).

Les moteurs enrouleurs, deux moteurs asynchrones à décalage de phase, sont alimentés à la fréquence du réseau (125 VAC). La commande de l'amplitude de tension est assurée par modulation à largeur d'impulsions à 76 kHz. Les amplificateurs de réglage sont constitués par le circuit intégré IC19, les modulateurs d'impulsions par IC15 et Q19/Q20 pour la modulation en dents de scie et IC20 pour les modulateurs.

L'étage final est constitué par les éléments suivants: étage d'attaque (IC21 et IC22), transformateurs de découplage (T1 et T2), redresseurs (DZ1 et DZ2), commutateurs (Q25 et Q26). Les transistors (Q21 à Q24) et les diodes (D26 à D29) servent à commander la commutation.

Les condensateurs déphaseurs sont reliés par les fils souples aux prises CIS (J7) et (J9). De même les deux moteurs par les prises CIS (J6) et (J8).

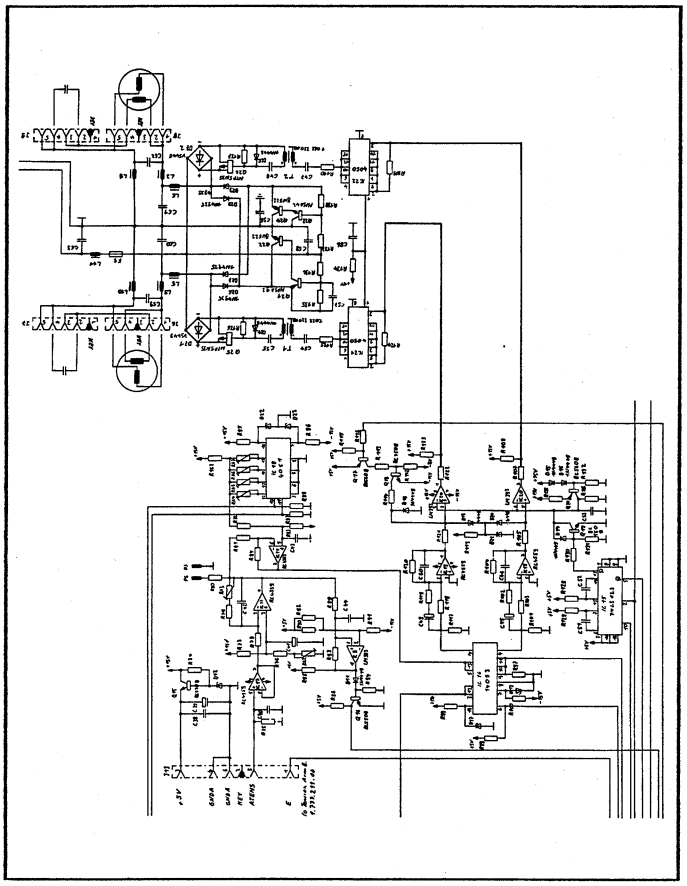

Fig. 5

3.2.3 TENSION ARM BOARD 1.777.211.00

Le signal rectangulaire 1,2288 MHz provenant du CONTROL BOARD est amplifié dans IC1 et appliqué au circuit oscillant parallèle (L1, C3, C4). Suivant la position angulaire du levier palpeur, la tension du circuit oscillant varie. Elle est redressée, filtrée et appliquée par P5 (ATENS) au circuit d'adaptation de gamme IC17 (fig. 5) sur le CONTROL BOARD. Ce circuit d'adaptation compense les tolérances mécaniques au moyen des potentiomètres réglables (RA2, RA3).

Le signal de réglage ainsi obtenu est appliqué au circuit de réglage de la tension de bande IC14, IC18 (fig. 5).

Il est possible de régler les tensions de bande suivantes:

- (Pot. RA4) pour tension en Edit
- (Pot. RA5) pour tension en Play
- (Pot. RA6) pour tension en Rewind «
- (Pot. RA7) pour tension en avance »

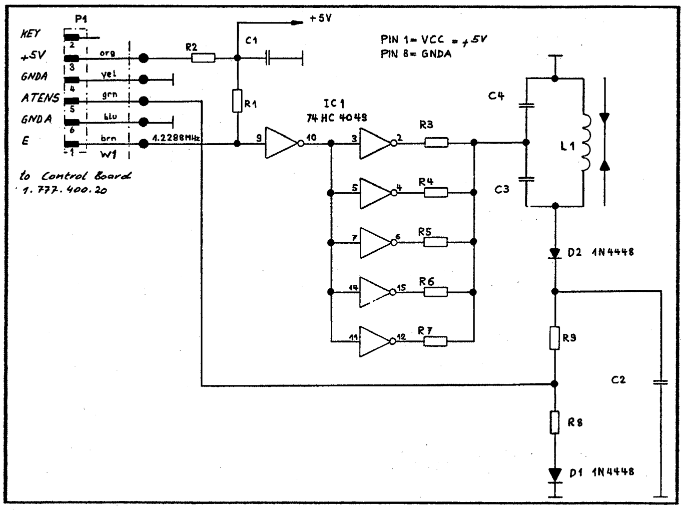
P1
KEY
+5V
GNDA
ATENS
GNDA
E
org
yel
grn
blu
brn
W1
to Control Board
1.777.400.20
+5V
C1
R2
R1
4.2288MHz
PIN 1= VCC = +5V
PIN 8= GNDA
IC1
74 HC 4049
R3
R4
R5
R6
R7
C4
C3
L1
D2 1N4448
R9
C2
R8
D1 1N4448

Fig. 6

3.2.4 TAPE MOVE SENSOR 1.020.316.00

Le galet compteur à 5 éléments est palpé par deux optocoupleurs (DLQ1, DLQ2). Les signaux sont appliqués par la prise (J12) au circuit d'évaluation sur le CONTROL BOARD (fig. 3). A l'aide de ce circuit d'évaluation (IC2, IC3, et Q1, Q2) le processeur peut constater la vitesse et le sens de rotation de la bande.

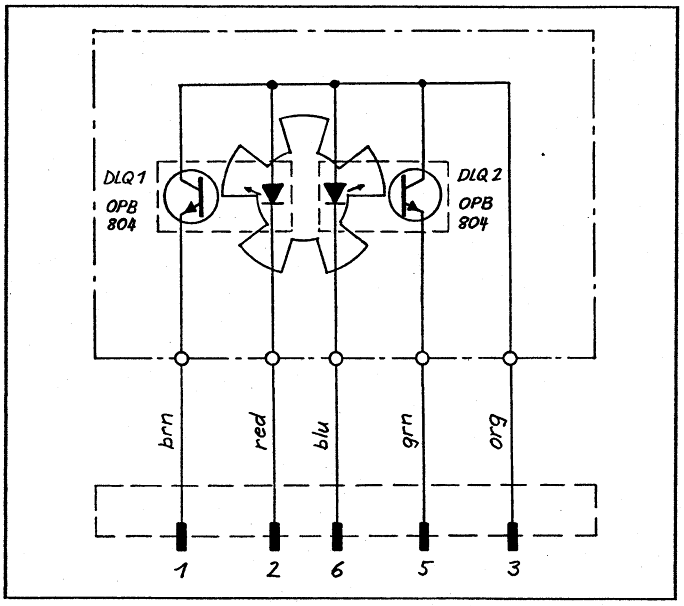
DLQ1
OPB
804
DLQ2
OPB
804
brn
red
blu
grn
org
1
2
6
5
3

Fig. 7

3.2.5 TAPE SENSOR BOARD 1.050.312.00

Le TAPE SENSOR BOARD porte une diode émettrice infrarouge (DL1) modulée à 38,4 kHz ainsi qu'un transistor de réception IR (QL1) qui fournit un courant au circuit oscillant parallèle (L4, C19, C20) sur le CONTROL BOARD (fig. 3) en fonction du type de bande, bande normale ou de marquage. Le signal filtré est redressé et appliqué au comparateur (IC8). Le signal évalué est transmis au processeur (IC6, broche 22). Le potentiomètre (RA1) permet de régler le seuil de commutation.

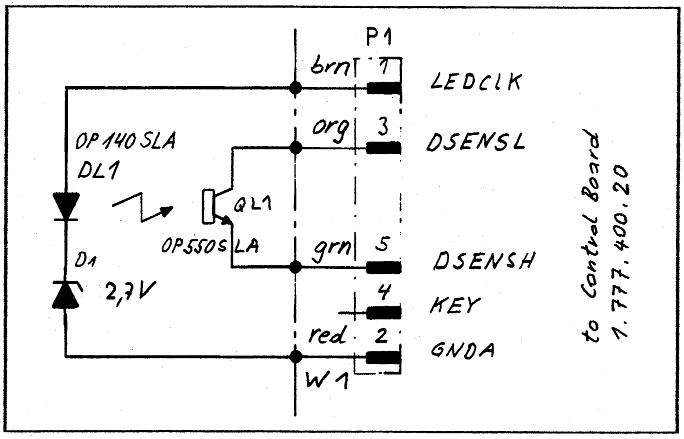
P1
brn 1 LEDCLK
org 3 DSENSL
OP140SLA
DL1
QL1
OP550SLA
D1
2,7V
grn 5 DSENSH
4 KEY
red 2 GNDA
W1
to Control Board 1.777.400.20

Fig. 8

3.2.6 TACHO BOARD 1.777.250.00

Le TACHO BOARD palpe la roue tachymétrique à 64 dents du moteur enrouleur droit (DLQ1, Q1). Le signal obtenu (DTACHO) est traité sur le CONTROL BOARD (bascule de Schmitt, IC2) et appliqué au processeur. Celui-ci reconnaît ainsi la vitesse de rotation du moteur enrouleur.

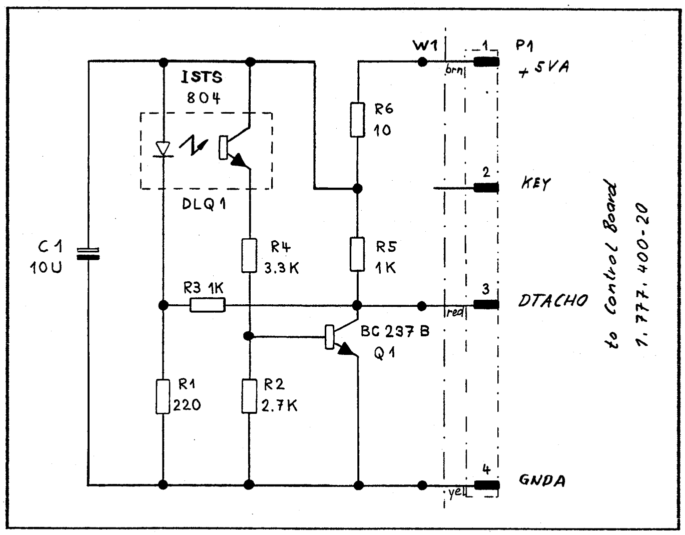
ISTS 804
DLQ1
C1 10U
R6 10
R4 3.3K
R5 1K
R3 1K
BC 237 B Q1
R1 220
R2 2.7K
W1 P1
brn 1 +5VA
2 KEY
red 3 DTACHO
yel 4 GNDA
to Control Board 1.777.400-20

Fig. 9

3.2.7 CAPSTAN SERVO BOARD 1.777.410.20

Le circuit d'asservissement du cabestan a pour tâche de maintenir constante la vitesse de rotation du moteur de cabestan, donnant une vitesse de défilement également constante et stable. L'ensemble CONTROL BOARD présente les raccords suivants:

- Alimentation +36 V DC sur la prise
- Alimentation +/-15 V DC et +5 V DC, signal d'horloge de référence 9,6 kHz TTL, un signal d'horloge de référence externe (S-SYNCIN), deux signaux binaires pour la commutation de référence de fréquence (S-VARISPD, S-SYNC) et deux signaux binaires pour la commutation de vitesse de bande (S-CAP1, S-CAP2) tous sur le câble plat (W1).

La référence de consigne est 9,6 kHz et peut être réglée à l'intérieur par le quartz de processeur ou par l'oscillateur Varispeed (IC1, IC3). La commutation correspondant au mode de service du C270 se fait dans IC5.

Ce signal est divisé dans IC6 par 16 et appliqué au circuit de sommation (IC2, IC12) par l'intermédiaire d'un convertisseur fréquence-tension.

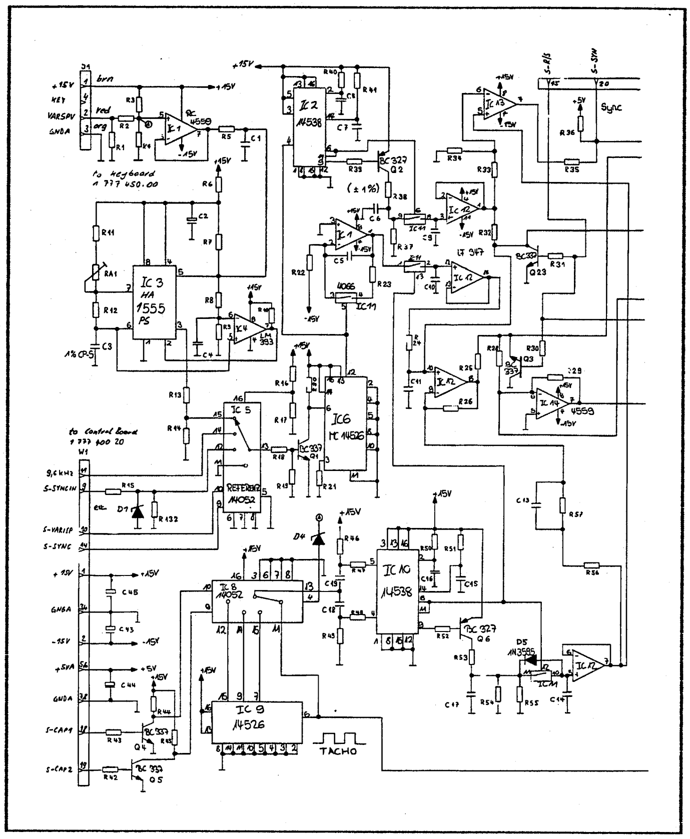
IC2 14538
IC3 HA 1555 PS
IC6 MC14526
IC10 14538
IC9 14526
IC8 14052
LF 347
4559
BC 327
BC 337
TACHO
Sync
to keyboard 1.777.450.00
to Control Board 1.777.400.20

Fig. 10

Le signal tacho (ATACHOA) du moteur de cabestan est d'abord démodulé en FM (IC17, IC18, IC19, Q22) et appliqué, suivant la vitesse de bande choisie (IC8, IC9, Q4, Q5) à un convertisseur fréquence-tension (IC10, IC12). La tension ainsi obtenue est également appliquée au circuit de sommation ci-dessus (IC2, IC12) mais avec polarité inversée.

Outre ces circuits, il y a encore un circuit PLL comparant les signaux de phase à la phase de référence et les appliquant également à l'entrée du circuit de sommation (IC1, IC11, IC12). Ce signal de somme est amplifié et appliqué au modulateur à largeur d'impulsions. Celui-ci commande le convertisseur CC-CC fournissant la tension d'alimentation correcte pour l'étage inverseur des moteurs (IC13, IC14, Q7, Q9).

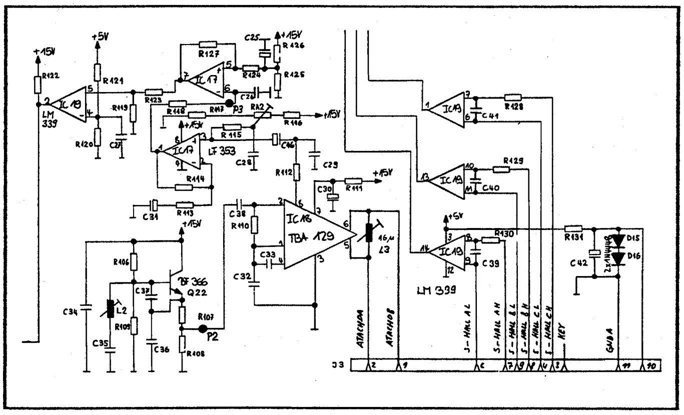
IC18
LM 339
IC17
LF 353
IC16
TBA 129
Q22
P2
P3
RA2
L2
L3
+15V
+5V
J3
LM 339
GND A
KEY

Fig. 11

Le circuit inverseur moteur se compose de ce qui suit:

- Un élément Hall signalant la position du rotor (IC19, fig. 11) par l'intermédiaire de la prise (J3).
- La commande logique décidant du commutateur à ouvrir ou à fermer (IC16, Q13 à Q21). Les transistors commutateurs conduisent le courant sur la voie correcte par les enroulements, prise (J2).
  Le potentiomètre RA1 fixe la plage Varispeed et le potentiomètre RA2 la symétrie tacho.

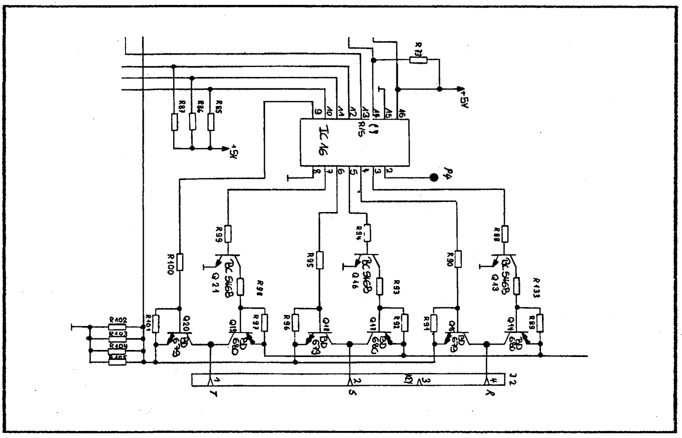
IC16
+5V
P4
J2

Fig. 12

3.2.8 CONNECTION BOARD 1.777.441.00

Le CONNECTION BOARD porte les interfaces suivantes:

- DIN 7 pôles (J2) interface sérielle RS 232
- DIN 8 pôles (J1) sortie moniteur
- DIN 8 pôles (J5) Fader ou Sync, réglage par commutateurs S11 à S14:

- S11/S12 OFF et S13/S14 ON: Sync actif
- S11/S12 ON et S13/S14 OFF: Fader Start actif

- Raccord Free Head

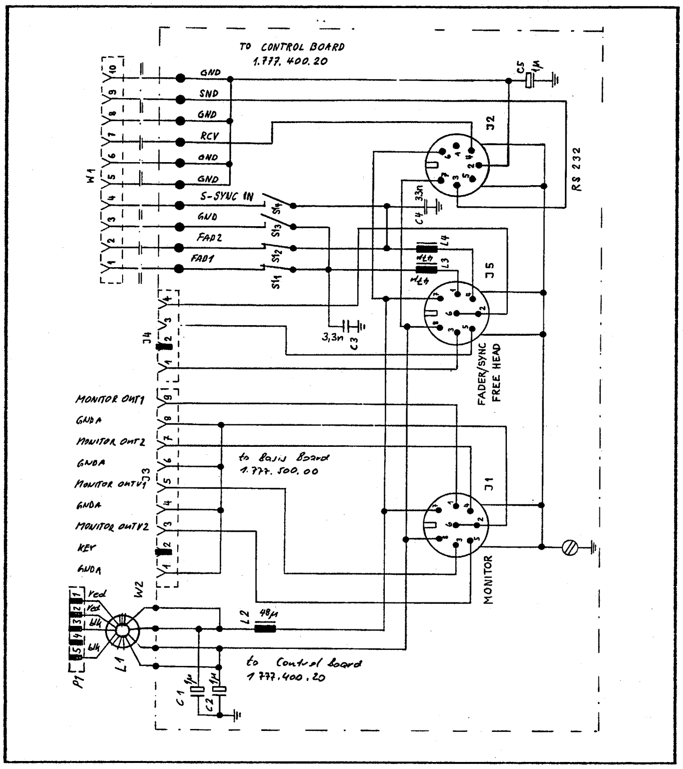
TO CONTROL BOARD
1.777.400.20
GND
SND
GND
RCV
GND
GND
S-SYNC IN
GND
FAD2
FAD1
W1
J2
RS 232
J5
FADER/SYNC
FREE HEAD
J4
MONITOR OUT1
GNDA
MONITOR OUT2
GNDA
MONITOR OUT1
GNDA
MONITOR OUT2
KEY
GNDA
J3
to Basic Board
1.777.500.00
J1
MONITOR
W2
P1
L1
L2
to Control Board
1.777.400.20
C1
C2
C3
C4
C5
L3
L4
S11
S12
S13
S14

Fig. 13

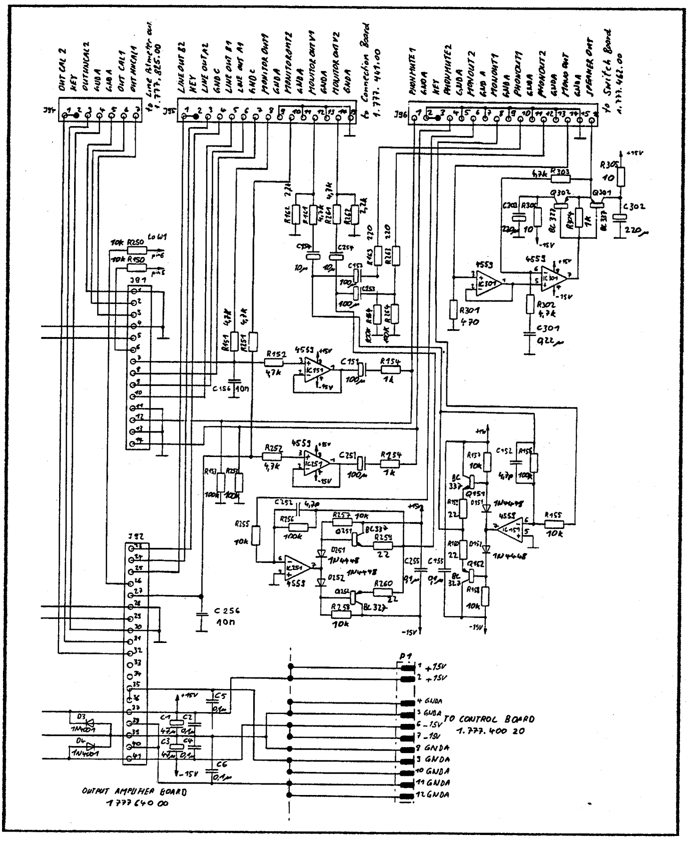
J35
J36
J37
J38
J32
P1
+15V
-15V
GNDA
4553
IC151
IC251
IC301
IC302
BC 337
BC 327
1N4448
C256 10n
TO CONTROL BOARD 1.777.400.20
OUTPUT AMPLIFIER BOARD 1.777.640.00
to Connection Board 1.777.461.00
to Switch Board 1.777.462.00

Fig. 17

3.3.2 MIC-LINE-SWITCH BOARD
1.777.520.00

Le MIC-LINE-SWITCH-BOARD est disponible en option. Toutes les interfaces passent par les prises (J11/J13) de l'AUDIO BASIS BOARD.

Le circuit microphonique se compose d'un transformateur d'entrée (T101 canal 1, T202 canal 2) et d'un amplificateur à faible souffle (IC101/Q101 canal 1, IC201/Q201 canal 2) qui peut être programmé par deux ponts pour deux sensibilités (P101 canal 1, P201 canal 2).

La sortie d'amplificateur est appliquée à un commutateur (IC102 canal 1, IC202 canal 2) permettant la sélection de microphone ou de ligne. En service microphone, les commutateurs (W101 canal 1, W201 canal 2) sur l'AUDIO BASIS BOARD doivent être ouverts. En mode microphonique, la sortie de commutation (IC103) alimente les étages Cal-Uncal correspondants.

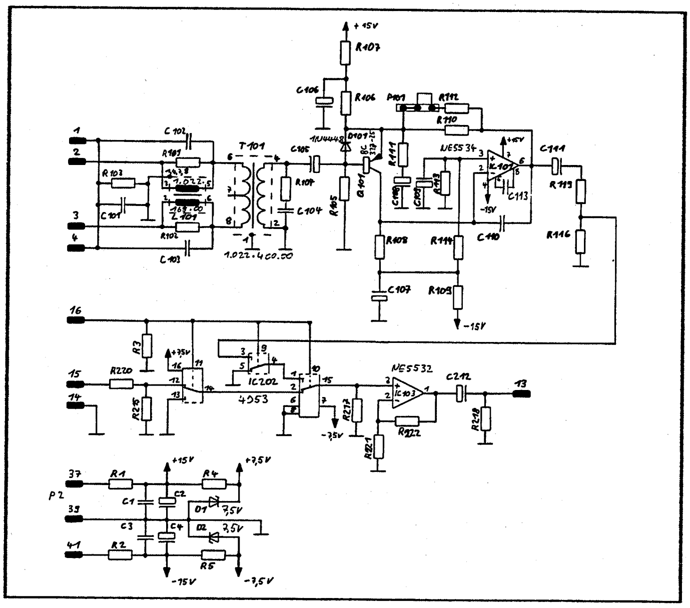
+15V
R107
C106
R106
P101
R112
R110
1N4448
D101
T101
C105
NE5534
IC101
C111
R113
R116
C110
R114
R108
C107
R109
-15V
1.022.400.00
IC202
4053
NE5532
IC103
C212
R228
R220
P2
R1
R2
R4
R5
D1
D2
7,5V
-7,5V

Fig. 18 (CH1)

3.3.3 RECORD EQUALIZER BOARD
1.777.540.00

Toutes les interfaces passent par les prises (J31/J32/J33) de l'AUDIO BASIS BOARD. Le signal d'entrée passe par un étage égaliseur (IC101/IC104 canal 1, IC201/IC204 canal 2) puis par un étage Treble (IC101/IC102/IC103 canal 1 IC201/IC202/IC203 canal 2). L'étage égaliseur est un filtre actif commutable pour deux vitesses.

Pour des raisons de flexibilité, variantes NAB ou IEC, les composants déterminant la fréquence sont placés sur le RECORD SPEED PRINT, prise (J1/J2). Le circuit Treble linéaire en phase peut être réglé pour deux vitesses avec les potentiomètres (RA11/RA12 canal 1, RA21/RA22 canal 2) pour la courbe de réponse et avec les potentiomètres (RA13/RA14 canal 1, RA23/RA24 canal 2) pour le niveau.

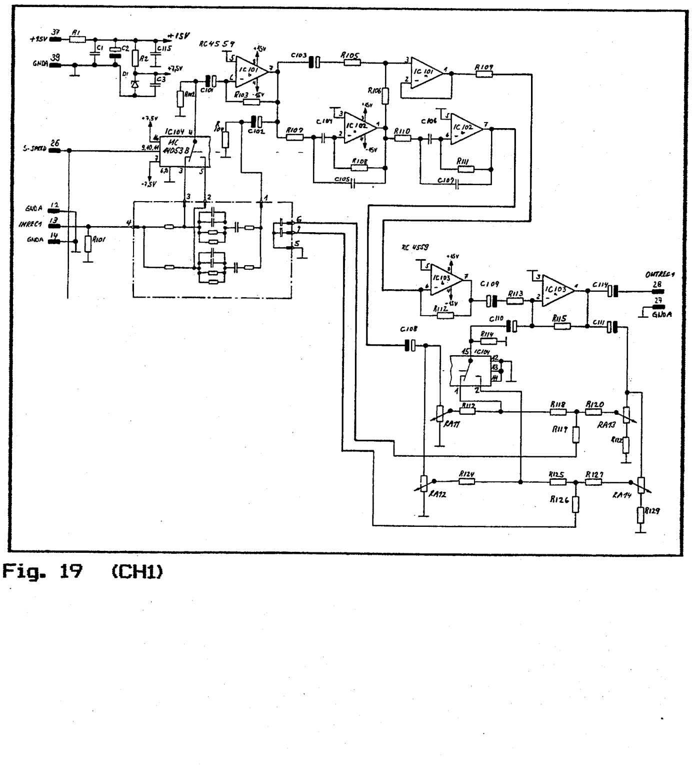
+15V
GNDA
IC101
IC102
IC103
IC104
MC 14053B
RC 4559
RA11
RA12
RA13
RA14
OUTREC1
GNDA

Fig. 19 (CH1)

3.3.4 RECORD SPEED BOARD IEC

Les Record Speed Boards selon norme IEC suivants sont disponibles pour la fréquence de correction:

- Record Speed Board 3,75/7,5 ips IEC 1.777.550.00
- Record Speed Board 7,5/15 ips IEC 1.777.552.00
- Record Speed Board 3,75/15 ips IEC 1.777.554.00

3.3.5 RECORD SPEED BOARD NAB

Les Record Speed Boards selon norme NAB suivants sont disponibles pour la fréquence de correction:

- Record Speed Board 3,75/7,5 ips NAB 1.777.556.00
- Record Speed Board 7,5/15 ips NAB 1.777.558.00
- Record Speed Board 3,75/15 ips NAB 1.777.559.00

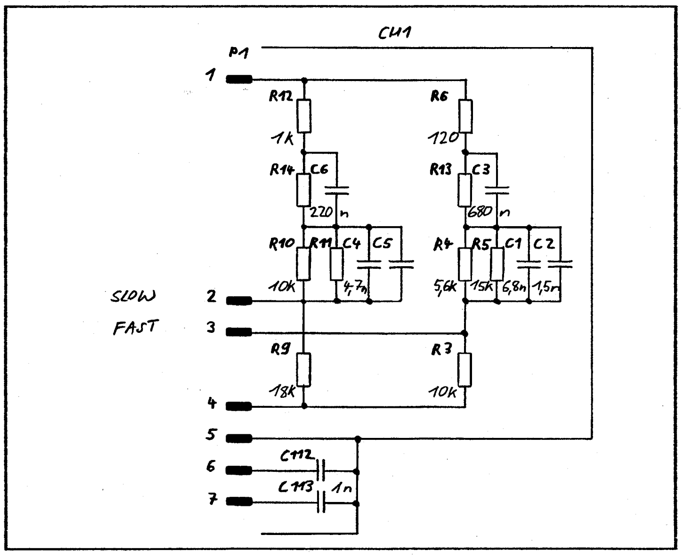

Fig. 20 (CH1)

3.3.6 ERASE AMPLIFIER BOARD 1.777.560.00

Toutes les interfaces sont constituées par les prises (J41/J42/J43) de l'AUDIO BASIS BOARD.
Le signal rectangulaire de référence 153,6 kHz est appliqué à un filtre passe-bas puis à un filtre passe-bande (IC14/L1/C45/C46). Le signal sinusoïdal ainsi obtenu sert de référence d'entrée pour les amplificateurs d'effacement et de prémagnétisation à commande par tension (IC102 Erase, IC303 Bias).
La sortie des amplificateurs à commande par tension est appliquée aux étages finals de puissance d'effacement (Q101-Q107 canal 1, Q201-Q207 canal 2). Les sorties passent par le circuit oscillant parallèle (T101/C112/C113/C114 canal 1, T201/C212/C213/C214 canal 2) et le contact relais (K1 sur le BIAS CONTROL BOARD) à la tête d'effacement sur le support de têtes. La mise sous tension et hors tension est assurée par IC101. Les potentiomètres (RA108 canal 1, RA208 canal 2) servent à régler la tension d'effacement.

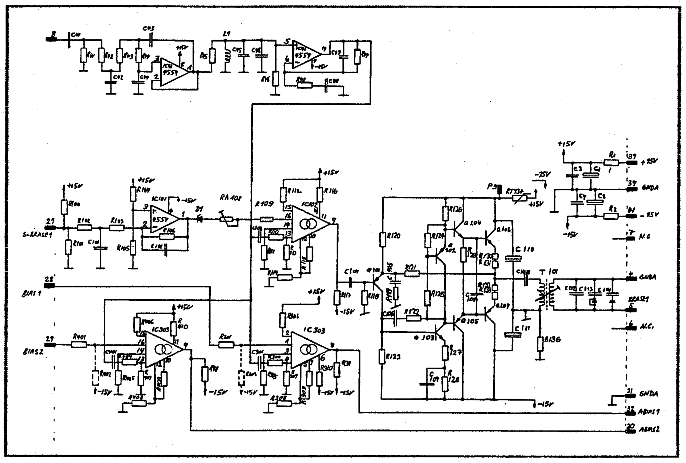

Fig. 21 (CH1)

3.3.7 BIAS CONTROL BOARD 1.777.570.00

Toutes les interfaces sont constituées par les prises (J51/J52/J53 pour canal 1, J61/J62/J63 pour canal 2).
La sortie de l'amplificateur à commande par tension (IC303 sur l'ERASE AMPLIFIER BOARD) est appliquée à l'étage final de prémagnétisation (Q4 à Q10). La sortie passe par le circuit oscillant parallèle (T1/C20/C21) et le relais commutateur Record-Sync (K1) vers la tête d'enregistrement.
Le signal audio venant du RECORD EQUALIZER BOARD passe par un étage final courant-tension (IC1) et un filtre passe-bande (L1/C7/C8/C9) vers le circuit oscillant ci-dessus, provoquant une superposition du courant de prémagnétisation HF au courant d'enregistrement audio. Le circuit oscillant série (L2/C10/C11) ferme le circuit HF.
Le FET (Q3) et son circuit de commande (Q1/Q2) libèrent le signal audio sans claquement. Le signal HF-NF mixte est évalué (R64/C23) et appliqué à un redresseur actif (IC2/D2/D3). Le signal redressé est ensuite appliqué à un étage comparateur (IC3). La référence de cet étage comparateur est réglée suivant la vitesse de défilement choisie (IC4) par le potentiomètre (RA1) ou (RA2). Cette tension de référence fixe le courant de prémagnétisation.
La sortie du comparateur fournit la tension de commande pour l'amplificateur commandé par tension sur l'Erase Amplifier Board. Ce circuit de réglage

HX-PRO améliore la possibilité de modulation des aigus à niveau élevé et fréquences élevées.

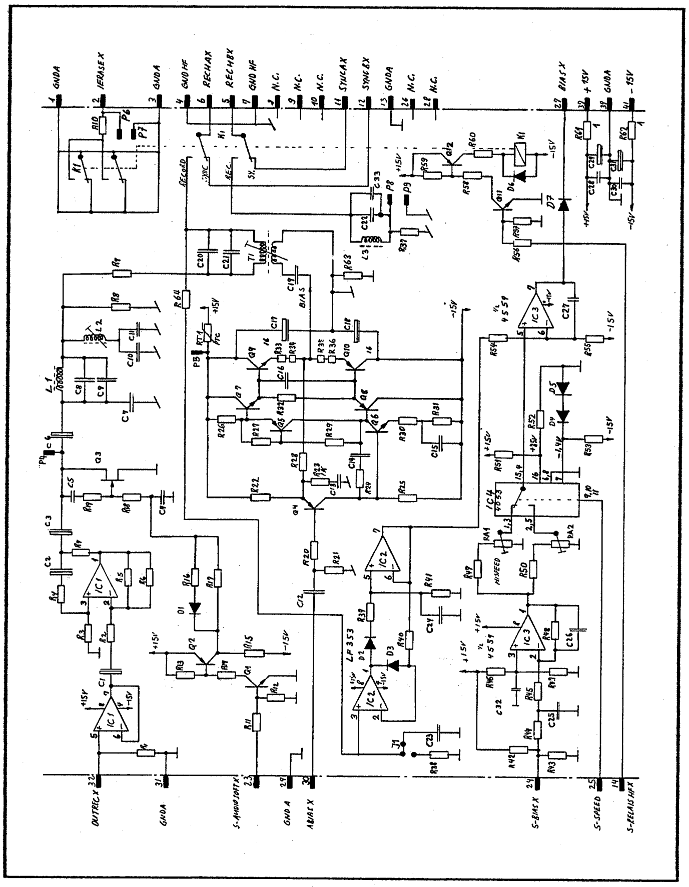
GNDA
ERASE X
GND HF
REC HAX
REC HBX
N.C.
SYNC AX
SYNC BX
BIAS X
+15V
-15V
IC1
IC2
IC3
IC4
LF353
4558
OUTREC X
GNDA
S-AMHOIDATE X
AMAE X
S-BIAS X
S-SPEED
S-ERASE HFX

Fig. 22

3.3.8 PREAMPLIFIER BOARD 1.777.610.00

L'interface est constituée par les prises (J71/J72/J73).
La tête de reproduction fournit la tension d'entrée pour les préamplificateurs de reproduction (IC101/Q101 canal 1, IC201/Q201 canal 2). La tête d'enregistrement fournit en mode SYNC la tension d'entrée pour les transformateurs symétriques (T101 canal 1, T201 canal 2) et les amplificateurs de reproduction synchronisée (IC101/Q101 canal 1, IC102/Q202 canal 2).
Suivant la présélection, le signal de reproduction ou de reproduction synchronisée est amené au REPRODUCE EQUALIZER BOARD par un filtre passe-bas (L101/C107/C108/C109 canal 1, L201/C207/C208/C209 canal 2).
Le FET (Q105/Q103/Q104 canal 1, Q205/Q203/Q204 canal 2) sert à la commutation sans claquement entre enregistrement et synchrone. Le niveau de reproduction synchronisée est réglé par le potentiomètre (RA171 canal 1, RA207 canal 2).

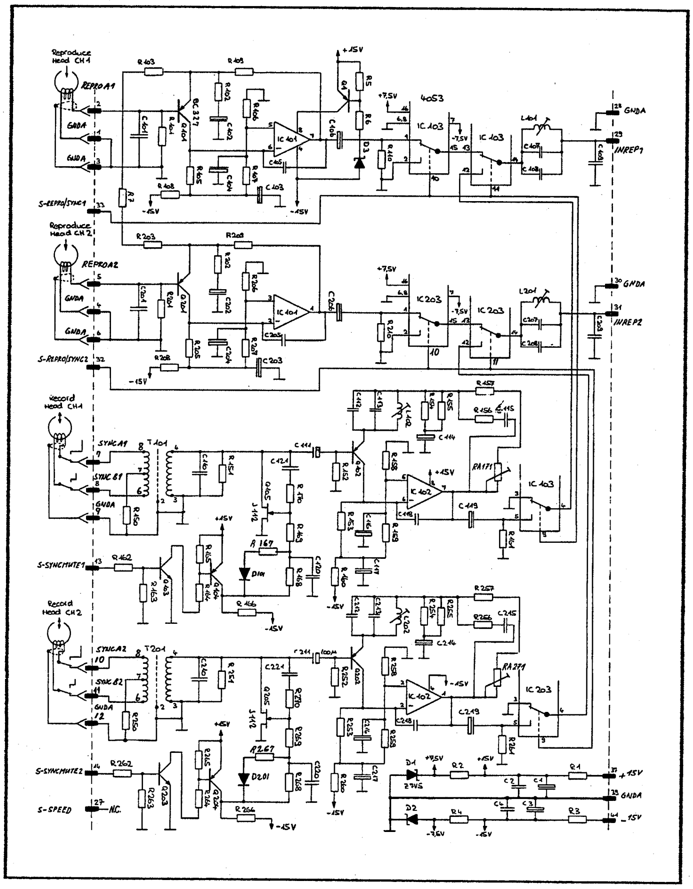
Reproduce Head CH1
REPRO A1
GNDA
S-REPRO/SYNC1
IC 101
IC 103
4053
L101
GNDA
INREP1
Reproduce Head CH2
REPRO A2
S-REPRO/SYNC2
IC 201
IC 203
L201
INREP2
Record Head CH1
SYNC A1
SYNC B1
T101
S-SYNCMUTE1
IC 102
RA171
Record Head CH2
SYNC A2
SYNC B2
T201
S-SYNCMUTE2
IC 202
RA271
S-SPEED
N.C.
+15V
-15V
GNDA

Fig. 23

3.3.9 REPRODUCE EQUALIZER BOARD 1.777.620.00

Le signal d'entrée traverse un étage égaliseur (IC101/IC102 canal 1, IC201/IC202 canal 2) puis l'étage Treble (IC101/IC102 canal 1, IC201/IC202 canal 2). Le filtre égaliseur est un filtre actif commutable pour deux vitesses.
Pour des raisons de flexibilité, variantes NAB et IEC, les composants déterminant la fréquence sont montés sur le REPRO SPEED BOARD enfiché, support de prises (J1/J2). Le circuit Treble peut se régler pour deux vitesses avec les potentiomètres (RA112/RA118 canal 1, RA212/RA218 canal 2) pour la courbe de réponse et les potentiomètres (RA116/RA122 canal 1, RA216/RA222 canal 2) pour le niveau. La sortie de cet étage est appliquée à un commutateur (IC103 canal 1, IC203 canal 2) qui sélectionne suivant la présélection Repro/Sync ou Input. En mode Edit, le signal d'entrée est adapté au niveau par le commutateur (IC102 canal 1, IC202 canal 2).

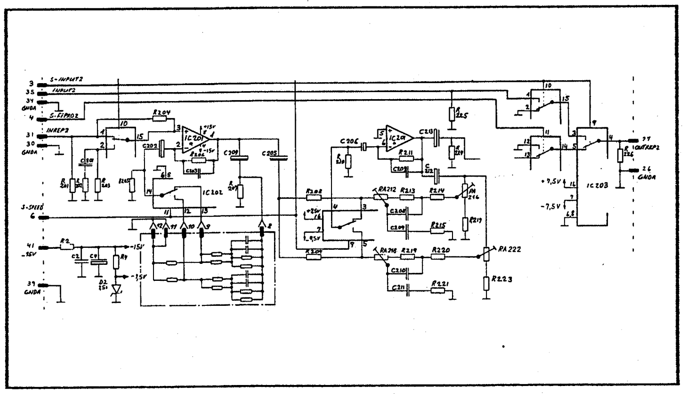
S-INPUT2
INPUT2
INREP2
S-EIPRO2
S-SPEED
GNDA
IC201
IC202
IC203
IC204
+15V
-15V
+7,5V
-7,5V
OUTREP2
RA222
R223
RA212
RA216

Fig. 24 (CH2)

3.3.10 REPRO SPEED BOARD IEC

Les Record Speed Boards selon norme IEC suivants sont disponibles pour la fréquence de correction:

- Record Speed Board 3,75/7,5 ips IEC 1.777.630.00
- Record Speed Board 7,5/15 ips IEC 1.777.632.00
- Record Speed Board 3,75/15 ips IEC 1.777.634.00

3.3.11 RECORD SPEED BOARD NAB

Les Record Speed Boards selon norme NAB suivants sont disponibles pour la fréquence de correction:

- Record Speed Board 3,75/7,5 ips NAB 1.777.636.00
- Record Speed Board 7,5/15 ips NAB 1.777.638.00
- Record Speed Board 3,75/15 ips NAB 1.777.639.00

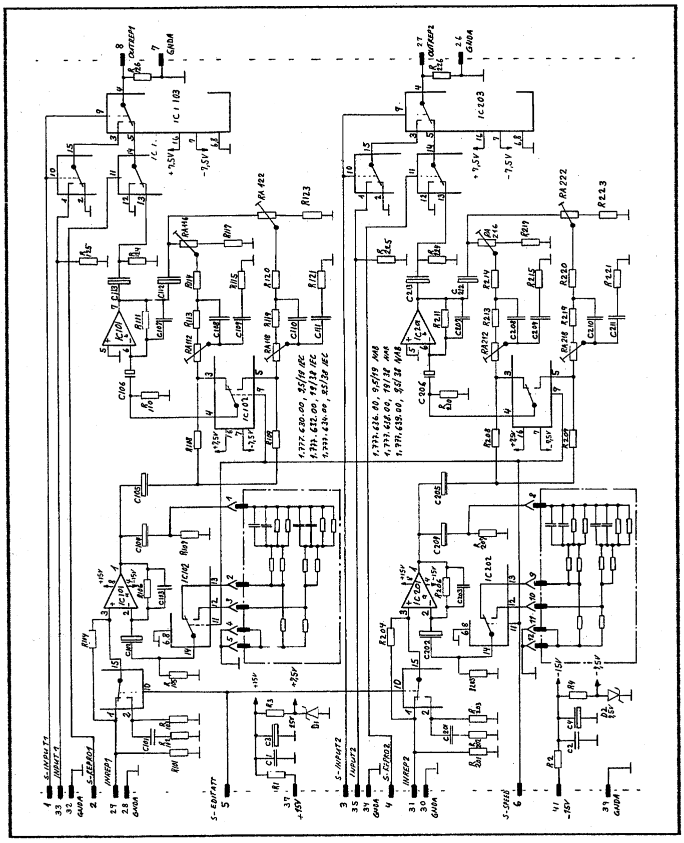
OUTREP1
GNDA
OUTREP2
IC103
IC203
RA122
RA222
R123
R223
IC101
IC102
IC201
IC202
1.777.630.00, 3,5/15 IEC
1.777.632.00, 15/30 IEC
1.777.634.00, 3,5/30 IEC
1.777.636.00, 3,5/15 NAB
1.777.638.00, 15/30 NAB
1.777.639.00, 3,5/30 NAB
+15V
-15V
S-INPUT1
INPUT1
S-EIPRO1
INREP1
S-EDITAT
S-INPUT2
INPUT2
S-EIPRO2
INREP2
S-SPEED
-15V
+15V

Fig. 25

3.3.12 OUTPUT AMPLIFIER BOARD 1.777.640.00

L'interface est constituée par les prises (J91/J92). Le signal d'entrée passe par l'amplifcateur Cal - Uncal (IC101/IC102 canal 1, IC201/IC202 canal 2) puis par l'amplificateur de puissance de sortie (IC103/Q101/Q102 canal 1, IC203/Q201/Q202 canal 2). Les potentiomètres (RA100/RA101 canal 1, RA201/RA202 canal 2) permettent de régler la plage Cal ou Uncal. En outre, la plage de réglage peut être réglée au moyen de ponts. La sortie (IC101/R201 canal 1, IC201/R201 canal 2) alimente l'étage de casque sur l'AUDIO BASIS BOARD. La sortie du circuit Cal-Uncal (IC101 canal 1, IC201 canal 2) alimente l'entrée reproduction (IC8 canal 1, IC9 canal 2) du VU-PEAK BOARD. La sortie de ligne est symétrique (T1 canal 1, T2 canal 2) et coupée par les contacts de relais (K1).

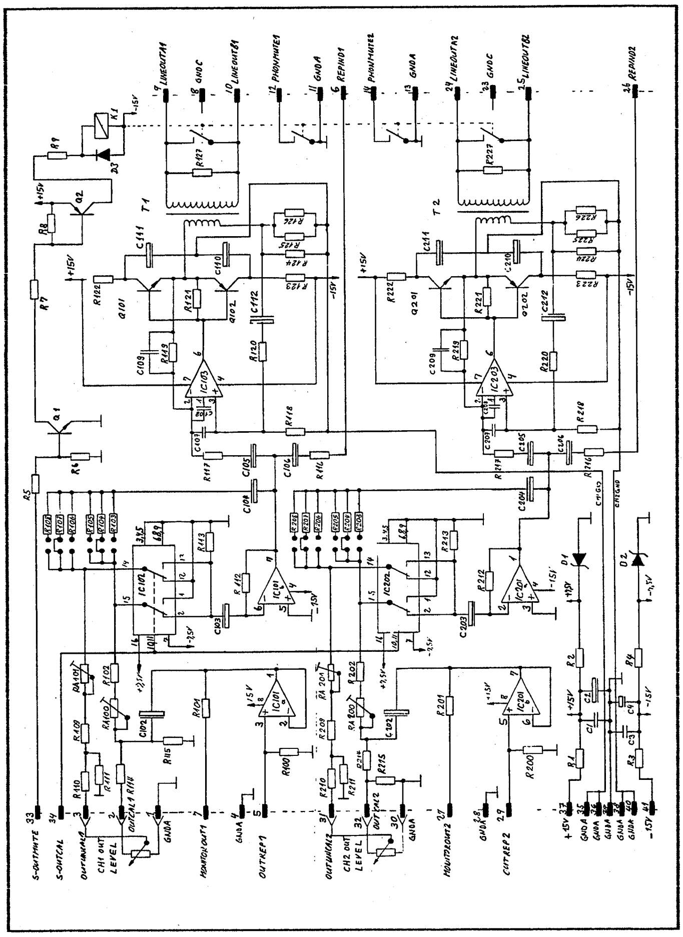
LINEOUTA1
GNDC
LINEOUTB1
PHONMUTE1
GNDA
REPINO1
PHONMUTE2
LINEOUTA2
LINEOUTB2
REPINO2
K1
T1
T2
Q1
Q2
Q101
Q102
Q201
Q202
IC103
IC203
IC101
IC102
IC201
IC202
RA100
RA101
RA200
RA201
D1
D2
+15V
-15V
S-OUTMUTE
S-OUTCAL
OUTUNCAL1
CH1 OUT LEVEL
MONITOROUT1
OUTREP1
OUTUNCAL2
CH2 OUT LEVEL
MONITOROUT2
OUTREP2

Fig. 26

3.3.13 AUDIO SWITCH BOARD 1.777.462.00

L'AUDIO SWITCH BOARD porte le présélecteur (S1) pour les sorties de moniteur et de casque dont le niveau peut être réglé par le potentiomètre (RA5). Les signaux de sortie casque sont appliqués à la prise Jack (J4). Le petit haut-parleur relié à (J8) est coupé lorsque la fiche est enfoncée ou au moyen d'un commutateur (commutateur de potentiomètre).

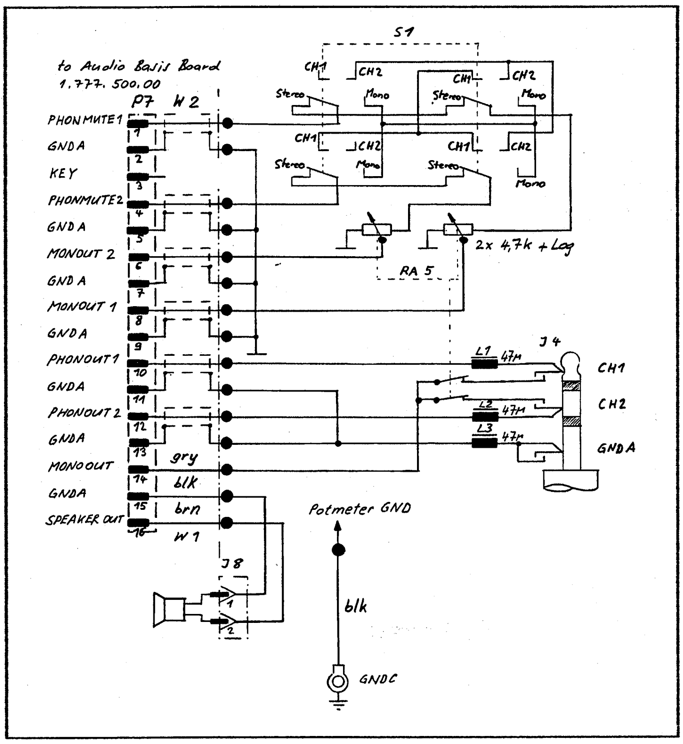
S1
to Audio Basis Board
1.777.500.00
P7
W2
PHONMUTE1
GNDA
KEY
PHONMUTE2
GNDA
MONOUT 2
GND A
MONOUT 1
GNDA
PHONOUT1
GNDA
PHONOUT 2
GNDA
MONOOUT
GNDA
SPEAKER OUT
gry
blk
brn
W1
CH1
CH2
Stereo
Mono
RA 5
2x 4,7k + Log
J4
L1 47μ
L2 47μ
L3 47μ
CH1
CH2
GNDA
J8
Potmeter GND
blk
GNDC

Fig. 27

3.3.14 VU-PEAK BOARD 1.777.460.00

Le VU-PEAK BOARD contient l'affichage VU et Peak. Le signal d'entrée, suivant la présélection (IC8/IC4 canal 1, IC9/IC4 canal 2) Input ou Repro, est appliqué à un redresseur actif (IC3/D1/D2 canal 1 IC7/D101/D102 canal 2). La sortie de cet étage alimente l'instrument VU (ME1 canal 1, ME2 canal 2) puis après un intégrateur les comparateurs de crête (IC1/IC2 canal 1, IC5/IC6 canal 2). Les sorties de comparateurs commutent suivant le seuil d'affichage (+6 dB, +9 dB, +12 dB), via l'étage (Q1-Q3 canal 2, Q4-Q6 canal 2) les LED (DL8-10 canal 1, DL108-DL110 canal 2). Les potentiomètres (RA2 canal 1, RA102 canal 2) permettent de régler les instruments VU et les potentiomètres (RA3 canal 1, RA103 canal 2) l'affichage de crête. Avec les potentiomètres (RA1 canal 1, RA101 canal 2) on ne règle que le niveau de reproduction pour l'affichage VU et Peak. Quatre lampes assurent l'éclairage des instruments (B1/B2 canal 1, B3/B4 canal 2).

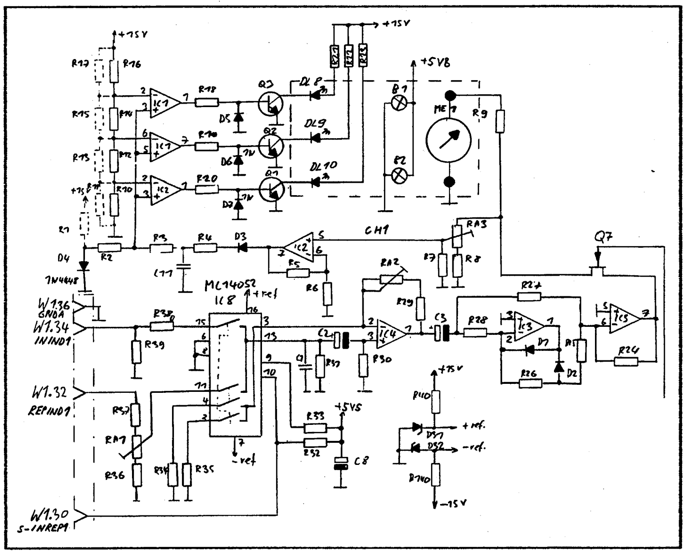
+15V
+15V
+5VB
R17
R16
R15
R14
R13
R12
R10
R11
R1
R18
R19
R20
IC1
IC2
Q3
Q2
Q1
D5
D6
D7
DL8
DL9
DL10
B1
B2
ME1
R9
R2
R3
R4
D3
D4
1N4448
C11
CH1
R5
R6
RA3
R7
R8
Q7
MC14052
IC8
+ref
W1.36
GNDA
W1.34
ININD1
W1.32
REPIND1
W1.30
S-INREP1
R38
R39
R37
RA1
R36
R34
R35
-ref
C1
C2
R31
R30
IC4
RA2
R29
C3
R28
R27
IC3
D1
D2
R25
R26
IC5
R24
R33
R32
+5VS
C8
R40
R140
D31
D32
+ref.
-ref.
-15V

Fig. 28 (CH1)

4. ALIGNEMENT

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4.1 MATERIEL NECESSAIRE

L'alignement nécessite les appareils et outils suivants:

▪ Millivoltmètre BF	no. com.: 46020
▪ Générateur BF	no. com.: 46021
▪ Bobine de démagnétisation	
grande	no. com.: 46595
petite	no. com.: 46596
▪ Balance à ressort 500 grammes	no. com.: 46177
▪ EXTENDER BOARD	no. com.: 46126
▪ Jeu de câbles de rallonge	no. com.: 46125
▪ Bande de référence de reproduction	
9,5 cm/s	no. com.: 46003
19 cm/s	no. com.: 46001
38 cm/s	no. com.: 46002
▪ Compteur de fréquence	no. com.: 46025
▪ Oscilloscope cathodique sur demande	
▪ Multimètre analogique sur demande	
▪ Voltmètre sélectif B ≤ 100 Hz	
▪ Crayon gras	
▪ Pincette	
▪ Tournevis	grandeur: 00
▪ Tournevis	grandeur: 2
▪ Tournevis	grandeur: 3
▪ Tournevis pour vis à six pans creux	grandeur: 2.5

4.1.1 Généralités

Attention:
Danger d'électrocution lorsque l'appareil est ouvert! Certaines parties de l'appareil sont à la tension du réseau.

Les modules fournis par STUDER REVOX nécessitent un reréglage du C270, de même qu'après des changements sur les différents modules.
S'il faut remplacer la tête d'enregistrement et de reproduction, il est préférable de confier l'appareil au service REVOX le plus proche.

4.1.2 Démagnétisation

Mettre le magnétophone hors tension et éloigner suffisamment la bande. Approcher lentement la bobine sous tension très près de la partie à démagnétiser et l'éloigner à nouveau lentement après peu de temps, ou faire passer lentement la tension du minimum au maximum et à nouveau au minimum avec un transformateur régulateur. Cette opération doit être effectuée sur toutes les parties métalliques touchant la bande (têtes, guidages, galets de renvoi, boulons). Avant la mise hors tension, éloigner la bobine de l'appareil (au moins 50 cm).

ATTENTION:
La bobine de démagnétisation démagnétise également les bandes enregistrées si elles sont placées à proximité!

4.1.3 Définition des niveaux

Le texte suivant est destiné à indiquer les nombreuses normes de niveaux relatives aux mesures audio.

- **Niveau de tension 0 dBm (= 0,775 V)**
  Cette définition de niveau est basée sur le niveau de puissance de 1 mW sur une résistance de charge quelconque. Sur une charge de 600 Ω, on a une chute de tension de 0,775 V.
  Cette tension est définie comme niveau de tension 0 dBm (sans référence à une charge).

- **0 dBu (= 0,775 V)**
  Ce niveau correspond à la tension de 0,775 V sans référence à une résistance de charge. [dBu] est quelquefois utilisé à la place du niveau de tension [dBm].

- **Niveau de ligne**
  Par niveau de ligne, on définit le niveau à la sortie d'un magnétophone lors de la reproduction d'une bande à flux magnétique de référence, ou autrement le niveau qui donne le flux de référence sur la bande à l'enregistrement lorsqu'il est appliqué à l'entrée d'un magnétophone.

- **Niveau de référence de tension**
  Désignation CCIR pour le niveau de ligne; ce niveau donne un affichage de 0 dB sur un crête-mètre (PPM, Peak Program Meter).

- **Standard Reference Level (Operating Level)**
  Désignation courante aux USA pour le flux de bande de 250 nWb/m (pour enregistrement sur les bandes High Output) ou 200 nWb/m (pour enregistrement sur bandes standards); ce niveau donne un affichage de 0 VU sur un VU-mètre.

- **Peak Level**
  Désignation courante aux USA pour un niveau supérieur de 8 à 10 dB à l'Operating Level. Pour des raisons de simplification, on applique dans la mesure d'un magnétophone un "Peak Level" de +6 dB par rapport à "Operating Level" (double niveau de tension).

- **Réglage IEC/CCIR**

DEFINITION:	NIVEAU DE LIGNE [dBm]	AFFICHAGE VU METRE [dB]
NIVEAU DE REFERENCE	0	0

- **Réglage NAB**

DEFINITION:	NIVEAU DE LIGNE [dBm]	AFFICHAGE VU-METRE dB]
OPERATING LEVEL:	+ 4	0
"PEAK LEVEL":	+10	+6

4.2 REGLAGE MECANIQUE

4.2.1 Généralités

Grâce au châssis stable en aluminium coulé sous pression et au mécanisme à 3 moteurs, la partie mécanique n'exige que très peu d'entretien. Les réglages et mesures se limitent à un petit nombre de pièces mobiles.

4.3 SUPPORT DE TETES

4.3.1 Guidages de bande

Les guidages de bande [1, 2] doivent être nettoyés. Ne jamais décaler le guidage [2]. Si nécessaire, on peut le retirer du support de têtes au moyen d'un tournevis cruciforme [3].

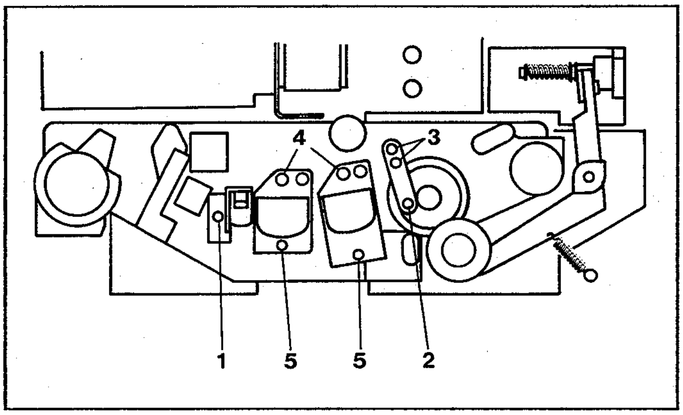


Fig. 1

4.3.2 Têtes magnetiques

La hauteur des têtes doit être réglée au moyen d'une bande magnétique ou transparente.

- Tracer légèrement au crayon gras sur les miroirs des têtes de reproduction et d'enregistrement. Faire défiler brièvement la bande magnétique et contrôler que l'entrefer de tête se trouve au milieu de la plage libérée.
- Nettoyer le miroir.
- Les corrections de hauteur se font au moyen des vis [4, 5] (fig. 1).

4.4 FREINS

Les freins agissent lorsque l'aimant de freinage est sans courant ou que la touche STOP est pressée.

4.4.1 Mesure des couples de freinage

Les mesures sont données pour un diamètre de noyau de la bobine vide de 115 mm.

- Poser et verrouiller une bobine vide.
- Enrouler quelques tours de ficelle fine sur la bobine. Pour mesurer les couples, une balance à ressort est fixée à la fin de la ficelle.
  Tirer lentement dans le sens correspondant avec la balance à ressort. Si les valeurs du dessin (fig. 2) ne sont pas atteintes, le système de freinage est à contrôler. Les garnitures et bandes de frein doivent absolument être propres et exemptes de graisse.

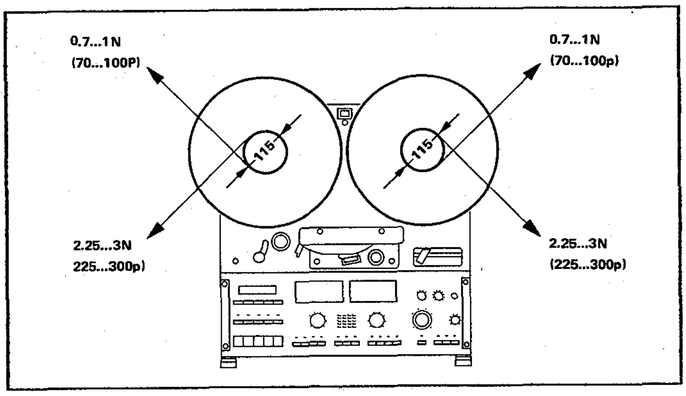


Fig. 2

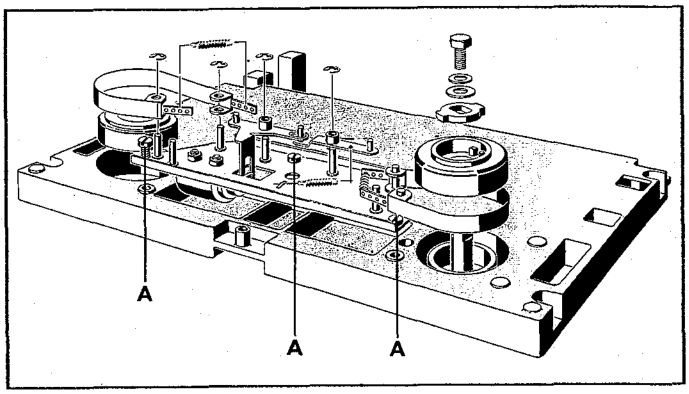


Fig. 3

4.4.2 Réglage des freins

Les garnitures encrassées peuvent être nettoyées au trichloréthylène. Les bandes de frein ne doivent pas être pliées et doivent être posées sur la garniture sur toute la largeur.
Après le remplacement des bandes ou des galets, régler à nouveau la course et le mécanisme des aimants de freinage de la manière suivante:

- Desserrer le frein à la main (introduire le noyau de l'électre-vimant de frein).
- Contrôler que les deux systèmes de freinage sont desserrés simultanément par les tiges de levage.
  Si ce n'est pas le cas, on peut desserrer le châssis de freinage (3 vis A, fig. 3) et le décaler jusqu'à ce que les bandes soient soulevées simultanément. Si nécessaire, un levier de réglage de frein peut être légèrement courbé.
  Pour le réglage des aimants de freinage, ceux-ci doivent être excités.
- Dévisser le plateau de bobine.
- Presser la touche Play et soulever la balance.
- Desserrer la fixation des aimants et décaler ceux-ci de manière que l'on entende pas de frottement sur les tambours.
- Bloquer les aimants de freinage.

4.5 GALET PRESSEUR

Le bras de pression est à action électromagnétique. La pression est définie par un ressort réglable.

4.5.1 Mesure de la pression

- Presser la touche Play.
- Avec la bande l'appareil on play. Accrocher un fil de nylon à une vis mise préalablement en place dans l'axe du galet et tirer avec une balance à ressort dans le sens A (fig. 5) jusqu'à ce que le galet se soulève de l'axe de cabestan (pleurage audible). La balance à ressort doit indiquer 10 N ±1 N (1 kp ±0,1 kp).

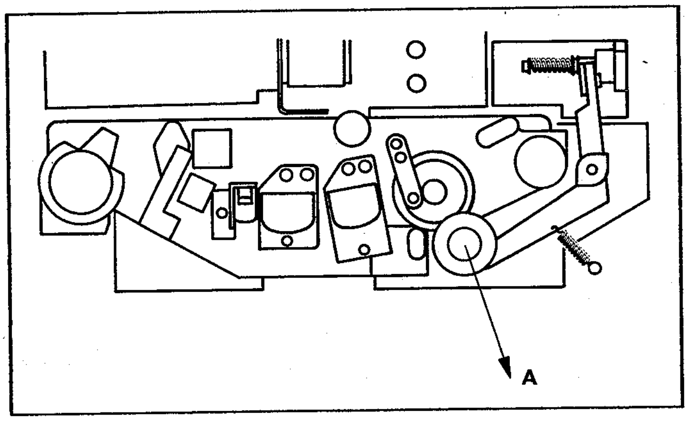


Fig. 4

4.5.2 Réglage du bloc de pression

- Commuter l'appareil sur Play.
- Sans que la bande magnétique soit introduite, couvrir l'ouverture de fin de course optique et soulever la balance de bande.
- Décaler l'aimant de pression à droite jusqu'à ce qu'on ait un espace B de 1 mm (fig. 5) entre l'entraîneur et le bras de pression. Bloquer l'aimant.
- Contrôler que l'armature de l'aimant est à la butée. Retirer légèrement le bras de pression de l'axe de cabestan, l'armature ne doit pas bouger.
- Fixer les vis de l'aimant de pression au moyen d'une goutte de vernis. Contrôler la pression et, si nécessaire, régler au moyen de la vis C (fig. 5).

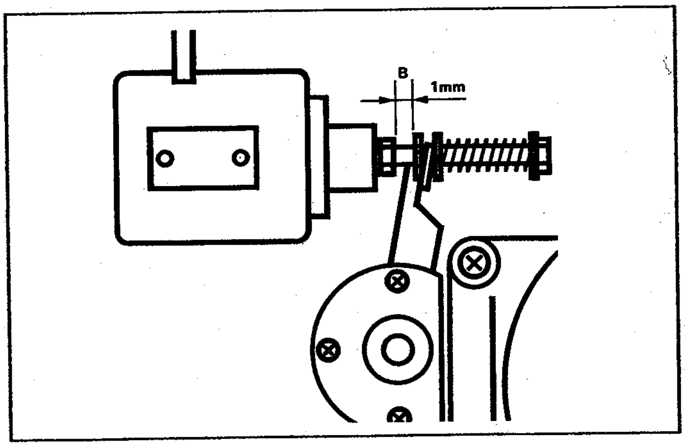


Fig. 5

4.6 REGLAGES DU MECANISME

4.6.1 Préparation

- Desserrer le CONTROL BOARD et rabattre de 90° en arrière. Rétablir au moyen de rallonges les connexions électriques qui doivent être coupées.
- Régler les commutateurs DIP (SZ1) de la manière suivante:

1	2	3	4	5	6	7	8
ON	OFF	OFF	OFF	OFF	OFF	ON	OFF

Ce réglage correspond à la version standard. Pour les versions spéciales éventuelles, les commutateurs ne sont réglés qu'après le réglage d'usine.
Pour diverses variantes, voir chapitre 3.2.2.

4.6.2 Réglage du cabestan

- Mettre l'appareil sous tension et sélectionner la vitesse de bande SLOW (3.75 ips ou 9.5 cm/s). SPEED DEVIATION doit être hors service (VARIABLE off).
- Raccorder le compteur de fréquence au point de mesure P2 du CAPSTAN SERVO BOARD et régler avec L2 une fréquence de 5,5 MHz.
- Raccorder l'oscilloscope au point de mesure P3, maintenir la touche PLAY enfoncée et accorder L3 pour l'amplitude maximale de signal.
- Maintenir la touche PLAY enfoncée et régler le potentiomètre RA2 du moteur de cabestan pour le minimum de bruit.
- Tourner le potentiomètre SPEED DEVIATION jusqu'à la butée droite, enclencher VARIABLE.
- Raccorder le compteur de fréquence au point commun de R13, R14 et régler au potentiomètre RA1 une fréquence de 14,4 kHz.
- Mettre l'appareil hors tension, retirer les rallonges et remonter le CONTROL BOARD.

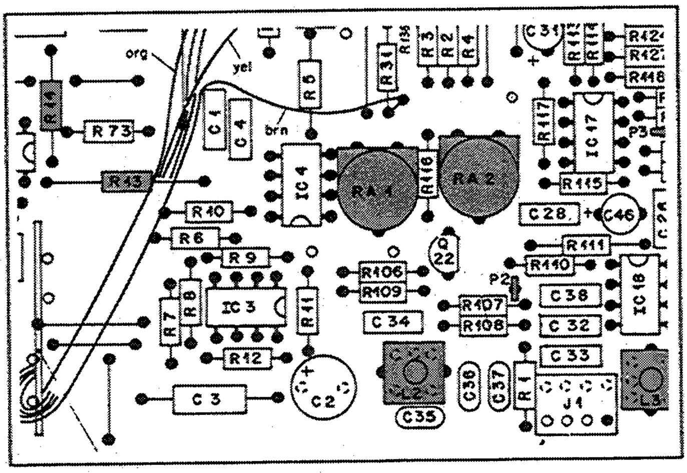


Fig. 6

4.6.3 Réglage de la balance de bande

NOTE:
Les réglages suivants sont également nécessaires pour les machines ayant des palpeurs de bande modifiés (2 ressorts).

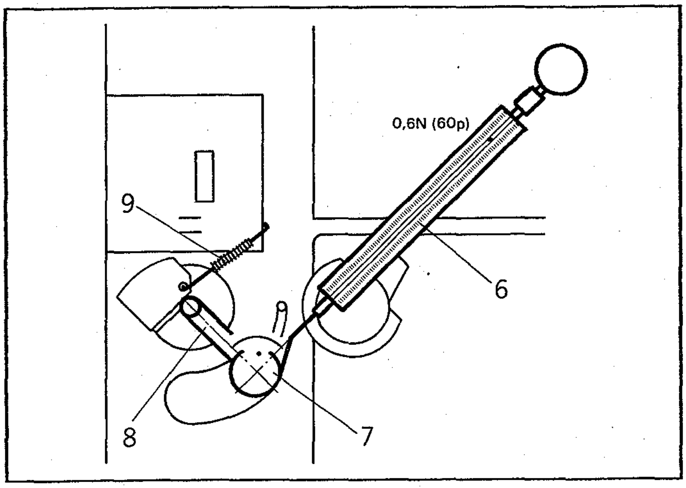


Fig. 7

- Retirer le couvercle de mécanisme.
- Fixer une balance à ressort [6] à l'axe du galet de bande [7] et tirer perpendiculairement au levier palpeur [8].

Lorsque le levier palpeur se trouve à peu près au milieu de sa plage de travail, régler une traction de balance à ressort de 0,6 N (60 p) en accrochant le ressort du levier [9] dans le trou correspondant.

- Monter le couvercle.
- Poser une bande magnétique de manière à avoir un diamètre d'environ 20 cm sur les deux bobines.
- Raccorder l'oscilloscope aux points de mesure P6 et P7 (masse) du CONTROL BOARD (fig. 8).
- Mettre l'appareil sous tension.
- Au moyen du potentiomètre RA3, régler une différence de tension de 4 V entre la butée inférieure et la butée supérieure du levier palpeur.
- Régler au potentiomètre RA2 une tension de 4 V à la butée inférieure du levier.
- Contrôler que la tension à l'oscilloscope varie entre 4 V et 0 V lorsque l'on déplace le levier palpeur de la butée inférieure à la butée supérieure.
- Retirer la sonde d'oscilloscope et régler avec les potentiomètres RA7, RA6, RA5 (fig. 9) les tractions de bande suivantes:

FUNCTION	FORCE ±15%	POT.
Forward	0,55-0,60 N (60 p)	RA7
Rewind	0,55-0,60 N (60 p)	RA6
Play	0,55-0,60 N (60 p)	RA5

- obiner la bande de manière que les deux diamètres de rouleaux soient à peu près égaux (environ 20 cm).
- résélectionner Edit et régler au potentiomètre RA4 (fig. 9) la traction de bande Edit de manière que la bande sorte à peu près d'autant dans les deux sens lorsqu'on avance de la même manière.

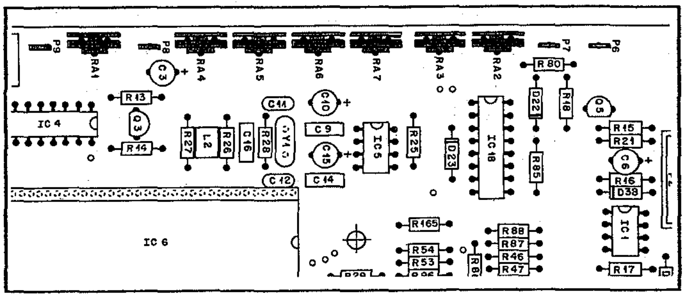


Fig. 8

4.6.4 Réglage du Tape Sensor

- Raccorder la sonde de l'oscilloscope aux points P8, P9 (masse) du CONTROL BOARD (fig. 9).
- Avec le potentiomètre RA1, régler la barrière lumineuse de manière à pouvoir mesurer à l'oscilloscope la différence entre la bande transparente (tension d'oscilloscope = 0 V) et la bande magnétique (tension d'oscilloscope = +5 V).
- Mettre l'appareil hors tension et programmer avec les commutateurs DIP (SZ1) suivant la version.

4.6.5 Réglage du galet compteur

Un réglage électrique est superflu pour le galet compteur.
Après une réparation ou autre, il faut cependant contrôler l'orientation optimale entre le galet et le TAPE MOVE SENSOR PCB 1.020.316.00.
Les conditions précises sont indiquées à l'instruction de démontage, chapitre 2.4.11.

4.7 REGLAGES AUDIO

4.7.1 Amplificateur d'entrée

Attention: toujours boucler les câbles de mesure avec 10 kΩ.
Les fig. 20/21 ainsi que le dessin des prises de raccordement se trouvent sur la page rabattable à la fin du présent manuel d'alignement.

- Les deux ponts [W101, W201] (fig.20) ne sont ouverts sur l'AUDIO BASIS BOARD que lorsque l'appareil équipé du MIC-LINE-SWITCH BOARD.
- Raccorder le générateur BF à LINE INPUT CH1, broches 2/3.
- Raccorder le millivoltmètre BF à la prise MONITOR (prise DIN broche 1 = CH1, broche 4 = CH2, broche 6 = GND).
- Mettre le magnétophone sous tension et présélectionner les deux canaux sur mode INPUT. L'appareil doit être utilisé en mode CAL.
- Appliquer au moyen du générateur un signal sinusoïdal 1 kHz au niveau d'entrée de 0 dBu (IEC) ou +4 dBu (NAB) (0 dBu = 0,775 V).
- Au moyen du potentiomètre CAL [CH1 = RA109, CH2 = RA209] et des ponts situés à côté (fig. 20) sur l'AUDIO BASIS BOARD, régler un niveau de sortie MONITOR de -6 dB.
  On observera le tableau ci-dessous "valeurs des ponts LINE INPUT".
- Activer le mode UNCAL, les deux potentiomètres sur la plaque frontale, INPUT CH1 et INPUT CH2 doivent être mis en position 5.
- Comme précédemment, au moyen des potentiomètres UNCAL [CH1 = RA113, CH2 = RA213] et des ponts situés à côté (fig. 20), régler à la sortie MONITOR un niveau de -6 dB.
  Voir le tableau ci-dessous "valeurs des ponts LINE INPUT".

Valeurs des ponts LINE INPUT
Niveau de référence interne: -6 dB = 0 VU
Réglage du potentiomètre: "5"

CAL. position		UNCAL.		pont
min. (dB)	max. (dB)	min. (dB)	max. (dB)	H (High) M (Medium) L (Low)
-10	+1,5	-10	+4	H
-2	+9	0	+15	M
+4	+16	+6	+22	L

4.7.2 Amplificateur de sortie

Attention: Toujours boucler LINE OUTPUT par une charge de 600 Ω. Pour les appareils de mesure asymétriques, court-circuiter les broches 1 + 3 du XLR.

- Raccorder le millivoltmètre BF à LINE OUTPUT CH1 resp. CH2.
- Raccorder le générateur BF à LINE OUTPUT CH1 et appliquer un signal sinusoïdal de 1 kHz pour un niveau d'entrée de 0 dBu (CEI) ou 4 dBu (NAB).
- Mettre les amplificateurs d'entrée et de sortie sur CAL.
- Au moyen du potentiomètre CAL (CH1 = RA100, CH2 = RA200) et des ponts situés à côté (fig. 20) sur l'OUTPUT AMPLIFIER BOARD, régler un niveau de 0 dBu (IEC) ou +4 dBu (NAB) au millivoltmètre BF.
  Voir le tableau ci-dessous "valeurs des ponts LINE OUTPUT".
- Mettre l'amplificateur de sortie en mode UNCAL et mettre en position 5 les deux potentiomètres de sortie, double bouton rotatif sur la plage frontale.
- Comme précédemment, régler au millivoltmètre BF un niveau de 0 dBu (IEC) ou +4 dBu (NAB) avec les potentiomètres UNCAL (CH1 = RA101, CH2 = RA201) et les ponts situés à côté (fig. 20).
  Voir le tableau ci-dessous "valeurs des ponts LINE OUTPUT".
- Remettre l'amplificateur de sortie sur CAL.
- Mettre les VU-mètres à la butée 0 VU (IEC et NAB!) au moyen des deux potentiomètres INPUT ADJ. CH1 (RA2), INPUT ADJ. CH2 (RA102) sur la plaque frontale de la partie de commande (fig. 21).
- Elever au générateur le niveau à +9 dBu (IEC) ou +13 dBu (NAB).
- Régler l'affichage Peak avec les potentiomètres PEAK ADJ. CH1 /RA3), PEAK ADJ. CH2 (RA103) à l'arrière de la partie de commande (fig. 21), de manière que la LED +9 VU commence tout juste à s'allumer.
- Effectuer le contrôle de courbe de réponse d'entrée avec contrôle simultané de la courbe de réponse des VU-mètres (niveau 0 VU; fréquence 0 - 25 kHz).
- Contrôle de précision de l'affichage Peak, +6 VU; +9 VU; +12 VU.

Valeurs des ponts LINE OUTPUT
Niveau de référence intere: -6 dBu = 0 VU
Réglage de potentiomètre: "%"

CAL. Stellung		UNCAL.		Jumper
min. (dB)	max. (dB)	min. (dB)	max. (dB)	H (High) M (Medium) L (Low)
-5	+15	0	+15	H
-10	+9	-10	+4	M
-20	-2	-20	-8	L

4.7.3 Adaptation de la tête d'effacement

- Couper le générateur
- Poser une bande vide et enficher la platine ERASE AMPLIFIER BOARD sur l'EXTENDER BOARD.
- Relier le multimètre analogique avec "-" à P5 (CH1) ou P4 (CH2) de l'ERASE AMPLIFIER BOARD (fig. 9) et "+" au point de mesure 37 de l'EXTENDER BOARD.
- Présélectionner l'enregistrement avec les deux touches READY et faire démarrer l'appareil en enregistrement.
- Régler T101 (CH1) et T201 (CH2) de manière que le multimètre atteigne le minimum de tension.

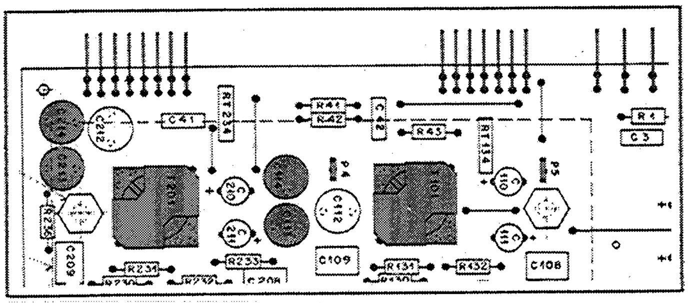


Fig. 9

- Si l'on constate que la tension n'augmente plus en continuant de tourner ou que l'on a atteint les deux butées, on peut décaler la plage de réglage en soudant C114 (CH1), C24 (CH2) ou en coupant C113 (CH1), C213 (CH2) aux endroits prévus sur le côté des conducteurs.
- Presser la touche STOP et mettre l'appareil hors tension.
- Retirer à nouveau l'ERASE AMPLIFIER BOARD de l'EXTENDER BOARD et enficher.

4.7.4 Réglage du courant d'effacement

- Relier la sonde d'oscilloscope au point de mesure pour le courant d'effacement (ERASE CURRENT) et au point de masse correspondant (BIAS AMPLIFIER BOARD), fig. 20.
- Mettre l'appareil sous tension et sélectionner les deux canaux avec la touche READY. Faire démarrer l'appareil en enregistrement.
- Au moyen des potentiomètres de courant d'effacement RA1, RA2 (fig. 20) pour chaque canal, régler un courant d'effacement de 600 mA crête-crête (1 mV de tension correspond à 1 mA de courant).
- Presser la touche STOP. Les miroirs des têtes d'enregistrement et de reproduction doivent être recouverts au crayon gras dans la zone de l'entrefer.
  Faire défiler brièvement la bande magnétique et contrôler que l'entrefer se trouve au milieu de la plage polie autrement voir 4.3.2.
- Nettoyer le miroir.

4.7.5 Reproduction

- Mettre l'appareil hors tension, nettoyer à fond le passage de la bande et démagnétiser les têtes.
- Raccorder le millivoltmètre BF à LINE OUTPUT CH1 (CH2), poser la bande de référence de reproduction.
- Mettre l'appareil sous tension, mettre les amplificateurs d'entrée et de sortie sur CAL et les deux canaux sur REPRO.
- Reproduire à 10 kHz avec la bande de référence.

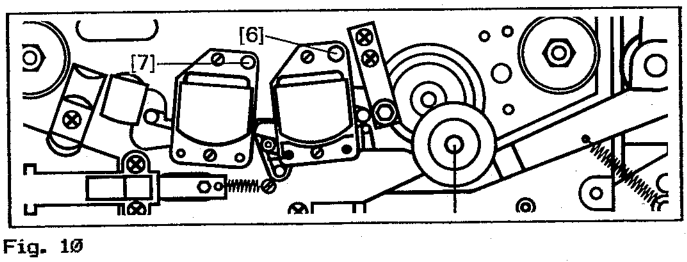


Fig. 10

- Régler la phase pour le maximum de tension au moyen de la vis de réglage [6] (fig. 10) sur la tête de reproduction.
- Raccorder parallèlement au millivoltmètre les sorties LINE OUTPUT CH1 et CH2.
- A la reproduction à 10 kHz de la bande de référence, régler à nouveau au maximum de tension.
- Traiter à nouveau les deux LINE OUTPUTs séparément.
- Dans la plage de niveau à la fréquence de 1 kHz, régler les potentiomètres de niveau:
  RA116 HS CH1
  RA216 HS CH2
  RA122 LS CH1
  RA222 LS CH2
  sur le REPRODUCE EQUALIZER BOARD (fig. 20) pour obtenir un niveau de sortie de 0 dBu (IEC) ou +4 dBu (NAB) à 257 nWb/m.
  On a: 257 nWb/m 0 VU.
- Faire défiler la bande jusqu'au secteur 10 kHz.
- Régler les potentiomètres Treble:
  RA112 HS CH1
  RA212 HS CH2
  RA118 LS CH1
  RA218 LS CH2
  sur le REPRODUCE EQUALIZER BOARD (fig. 20) pour régler à nouveau le niveau de sortie suivant le flux magnétique.
- Contrôler la courbe de réponse de reproduction à l'aide de la bande de référence.

4.7.6 Adaptation de la tête d'enregistrement

- Poser une bande magnétique et court-circuiter la prise LINE OUTPUT CH1 (les 3 prises les unes contre les autres).
- L'appareil hors tension, enficher le BIAS AMPLIFIER BOARD sur l'EXTENDER BOARD.
- Relier le multimètre (–) à P5 (fig. 14), (+) au point de mesure 37 (EXT. BOARD). Raccorder la sonde d'oscilloscope à P4 (fig. 11), la masse au point de mesure 39 (EXT. BOARD).
- Mettre l'appareil sous tension, présélectionner READY et initialiser l'enregistrement.

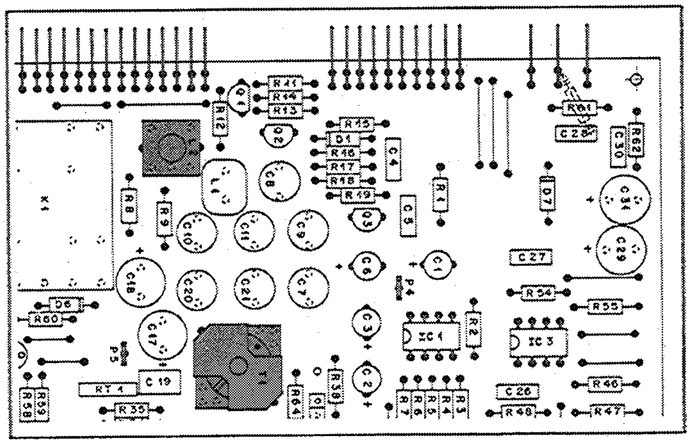


Fig. 11

- Régler T1 (fig. 11) pour le minimum de tension au multimètre.
- Régler L2 (fig. 11) pour le minimum HF à l'oscilloscope.
- L'alignement pour le canal 2 se fait de la même manière.
- Retirer l'EXTENDER BOARD, remettre le BOARD.

- Appliquer avec le générateur un signal de 10 kHz à l'entrée au niveau de -20 dBu.
- Relier LINE OUTPUT CH1 au millivoltmètre BF.
- Régler la vis [7] de la tête d'enregistrement (fig. 10) pour le maximum de tension au millivoltmètre BF.
- Relier les deux LINE OUTPUTs parallèlement au millivoltmètre BF.
- Régler la vis de réglage [7] pour le maximum de tension de sortie. (Attention à la temporisation entre la tête d'enregistrement et la tête de reproduction).
- Presser la touche STOP et mettre l'appareil hors tension.

4.7.7 BIAS

- Relier le millivoltmètre BF et le générateur (10 kHz -20 dBu) à LINE INPUT ou respectivement OUTPUT CH1 (CH2).
- Tourner jusqu'à la butée gauche le potentiomètre BIAS CH1 RA108 (CH2 RA208), sur l'ERASE AMPLIFIER BOARD (fig. 20).
- Mettre l'appareil sous tension, présélectionner READY et démarrer en enregistrement.

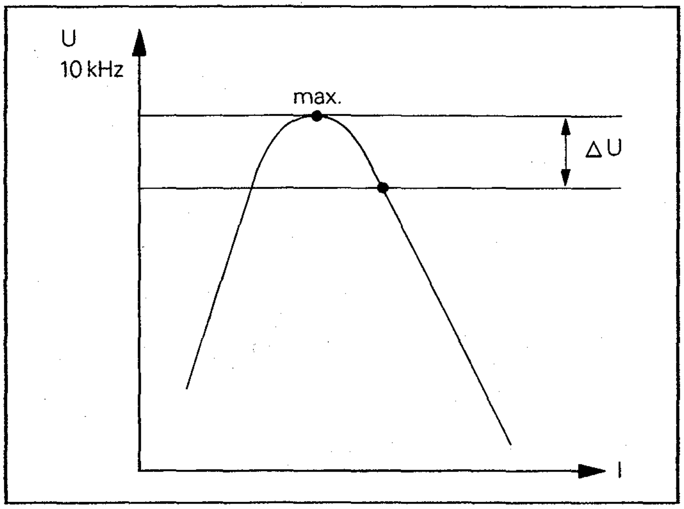


Fig. 12

- Tourner lentement le potentiomètre BIAS correspondant dans le sens horaire jusqu'à ce que le millivoltmètre BF indique le maximum de tension de sortie.
- Continuer à tourner soigneusement dans le sens horaire jusqu'à ce que la différence de tension (Ù) selon fig. 12 soit atteinte.

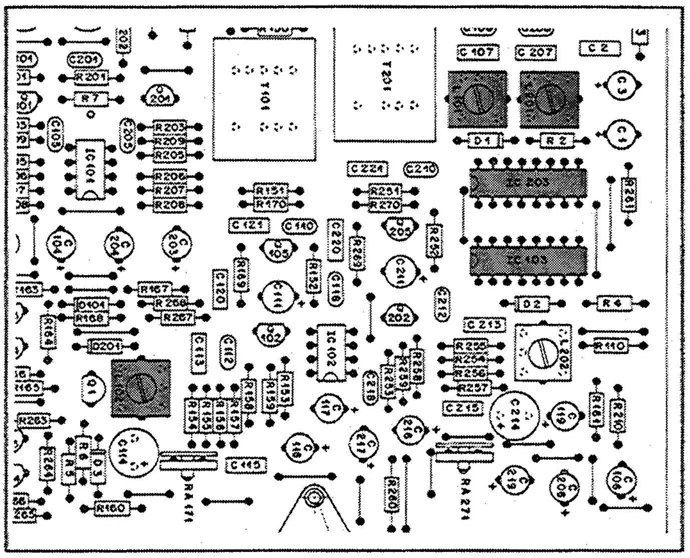
Tape Speed	9.5 cm/s 3 3/4 ips	19cm/s 7 1/2 ips	38cm/s 15 ips
Type of Tape	ΔU(dB)	ΔU(dB)	ΔU(dB)
REVOX 601	5	4	3
REVOX 621	4,5	4	3
REVOX 631	6	6	4
REVOX 641	6	5	4
SCOTCH 206	5	4	3
SCOTCH 207	5	4	3
SCOTCH 226	6	6	4
SCOTCH 250	5	6	4
SCOTCH 256	6	6	4
SCOTCH 262/263	6	6	3
SCOTCH classic	5	5	3
Ampex 406	6	5	4
Ampex 407	6	5	4
Ampex 456	5	6	4
Agfa PEM 368	5	5	4
Agfa PEM 369	6	6	3
Agfa PEM 468	6	6	4
Agfa PEM 469	7	7	5
Agfa PER 525	6	5	3
Agfa PER 528	6	6	4
BASF LPR-35LH	6	5	4
BASF SPR50 LH(L)	6	5,5	3,5
BASF LGR 30P	6	5,5	4
BASF LGR 50	6	6	4
BASF LGR 51	6	6	4
BASF Studio Master 911	6	8	4,5
Maxell UD-XL	6	5	4
TDK AUDUA	6	5	4
EMI 816/817	6	6	4

4.7.8 Courbe de réponse sur bande

- Appliquer un signal sinusoïdal de 1 kHz à −20 dBu (IEC) ou −16 dBu (NAB) et régler pendant l'enregistrement, avec présélection REPRO, les potentiomètres (fig. 20):
  RA13 MS CH1
  RA14 LS CH1
  RA23 MS CH2
  RA24 LS CH2
  sur le RECORD EQUALIZER BOARD pour un niveau de sortie de −20 dBu (IEC) ou −16 dBu (NAB).
- Augmenter la fréquence du générateur à 10 kHz au même niveau et régler comme pour 1 kHz les niveaux de sortie au moyen des potentiomètres Treble (fig. 20):
  RA11 HC CH1
  RA12 LS CH2
  RA21 HS CH1
  RA22 LS CH2
  sur le RECORD EQUALIZER BOARD. La courbe de fréquence doit être contrôlée conformément aux caractéristiques techniques (voir 4.7.10).
- Régler la fréquence de générateur 1 kHz et augmenter le niveau à 0 dBu (IEC) ou 4 dBu (NAB).
- Régler les potentiomètres REPRO ADJ. (fig. 21) sur la partie de commande pour que le VU-mètre indique 0 VU (RA1 CH1, RA101 CH2).

4.7.9 Amplificateur Sync

- Enficher le PREAMPLIFIER BOARD sur l'EXTENDER BOARD.
- Relier la sonde de l'oscilloscope au point de mesure 28 (masse) et 29 pour canal 1 ou 30 (masse) et 31 pour canal 2. Tous les raccords de mesure se trouvent sur l'EXTENDER BOARD.
- Court-circuiter les deux LINE INPUTs (les 3 broches les unes contre les autres), présélectionner READY et REPRO. Faire démarrer l'appareil en enregistrement.
- Régler L101 (CH1) ou L201 (CH2) pour le minimum de HF à l'oscilloscope (fig. 13).
- Mettre l'appareil sur STOP et raccorder l'oscilloscope avec la masse au point de mesure 39 de l'EXTENDER BOARD et au PREAMPLIFIER BOARD à la broche 5 ICE103 (CH1) et la broche 5 ICE203 (CH2) (fig. 12).
- Présélectionner les deux canaux sur Sync et reproduire une partie de bande effacée précédemment (pas de bande neuve).
- Régler L102 (CH1) ou L202 (CH2) pour le minimum de HF à l'oscilloscope (fig. 12).



C204
R201
R7
Q204
C103
IC101
C205
R203
R209
R205
R206
R207
R208
T101
T201
C107
C207
C2
C3
C1
D1
R2
C224
C240
R151
R170
R251
R270
IC203
IC103
R261
C121
C140
C220
R269
Q205
R252
C104
C204
C203
Q105
R169
R152
C211
C120
C114
C116
R163
R167
R266
R267
D104
R168
R164
D201
C113
C112
Q102
IC102
Q202
C212
D2
R4
C213
L202
R110
R255
R254
R256
R257
Q1
L101
R158
R159
R153
R154
R155
R156
R157
R253
R259
R258
C218
C117
C215
C214
C119
R161
R210
R263
R264
R5
R6
D3
C114
C145
C118
C217
C216
R260
RA171
RA271
C219
C208
C106
R160
R265

Fig. 13

- Mettre l'appareil sur Stop et hors tension. Retirer l'EXTENDER BOARD.
- Enregistrer sur les deux canaux une fréquence de 1 kHz au niveau de 0 dB (IEC) ou +4 dB (NAB) pendant 1 minute environ.
- Reproduire la partie de bande enregistrée précédemment et régler les potentiomètres SYNC REPRODUCE RA171 CH1 (RA271 CH2) sur le PREAMPLIFIER BOARD (fig. 20) pour un niveau de 0 dBu (IEC) ou +4 dBu (NAB).

4.7.10 Contrôle de courbe de frequence sur bande

- Le contrôle de bande passante sur bande se fait avec un niveau de générateur de −20 dB.
- Ensuite, la bande peut être rebobinée au début du contrôle de bande passante et la courbe de réponse Sync contrôlée lors d'une nouvelle reproduction.

4.8 MEASUREMENT OF VARIOUS CHARACTERISTIC DATA

4.8.1 Harmonic distortion across tape

A K3 filter (3rd harmonic) is required for measuring the harmonic distortion of tape recorders. The AF generator frequency (500 Hz) must be selected in accordance with the available frequency (1500 Hz). The measurements relate to maximum output level.

- Connect the AF generator to the INPUT CH1 CH2.
- Adjust the frequency.
- Connect the distortion meter to the output.
- Mount a new tape and start the recording. Measure the distortion; the reference values are specified in the technical data.

4.8.2 Signal-to-noise ration with tape

- The signal-to-noise ratios refer to maximum output level.

Speed	IEC	NAB
9,5 cm/s	400nW/m	400nW/m (0 VU +3,8dB)
19 cm/s	514nW/m	514nW/m (0 VU +6,0 dB)
38 cm/s	514nW/m	514nW/m (0 VU +6,0 dB)

In order to prevent measurement error by stray RF pickup, the measurements are performed with a tape that has been erased on the recorder.

- Connect the AF millivoltmeter to the LINE OUTPUT CH1 (CH2).
- Start the recorder in play mode and measure the signal-to-noise ratio (linear and weighted) with a corresponding filter. If the nominal values are not achieved, carefully demagnetized the tape guidance elements and the soundheads.

4.8.3 Erase depth

To measure the erase efficiency, an AF frequency is recorded and subsequently erased. The recording remaining on the tape is measured. The measurement relates to maximum output level.

- Preselect the AF generator frequency of 1 kHz.
- Connect the AF millivoltmeter to the OUTPUT CH1 (CH2), filter enabled. Connect the AF generator to the INPUT CH1 (CH2) 0 VU + 6 dB.
- Mount a new tape and record a short tape segment. Switch the machine to STOP and rewind to the start of the recording.
- Switch off the generator.
- Start the machine in record mode and measure the erase depth.

4.8.4 Mono channel separation

For this measurement we recommend that a virgin tape be used. The measurement relates to maximum output level.
Operate the unit in CAL mode.

- Connect the AF generator (1 kHz) to the LINE INPUT CH1. Mount the tape and record a tape segment (only on CH1) with a duration of approx. 1 minute.
- Rewind the tape to the start of the recording.
- Connect a selective voltmeter to the LINE OUTPUT CH2.
- Switch the unit to play mode and measure the separation CH1 -> CH2.
- In order to record the right-hand channel, spool the tape forward to a blank section.
- Connect the AF generator to the LINE INPUT CH2. Make the same recording on CH2 as on CH1.
- Rewind the tape to the start of the recording.
- Connect a selective voltmeter to the LINE OUTPUT CH1.
- Switch the unit to play mode and measure the separation CH2 -> CH1.

4.8.5 Stereo channel separation

The measurements relate to maximum output level.
To measure the stereo channel separation,

- Connect the AF generator to the LINE OUTPUT CH1. Connect the selective voltmeter to the LINE OUTPUT CH2.
- Set the AF generator to 1 kHz, maximum output level.
- Start the unit in record mode (CH1 + CH2) and measure the crosstalk on CH2.
- Connect the AF generator to the LINE INPUT CH2. Connect the selective voltmeter to the LINE OUTPUT CH2. Start the recording and measure the crosstalk on CH1.

4.8.6 Wow and flutter

The wow-and-flutter specified in the technical data are to be measured with a wow-and-flutter meter according do DIN 45507.

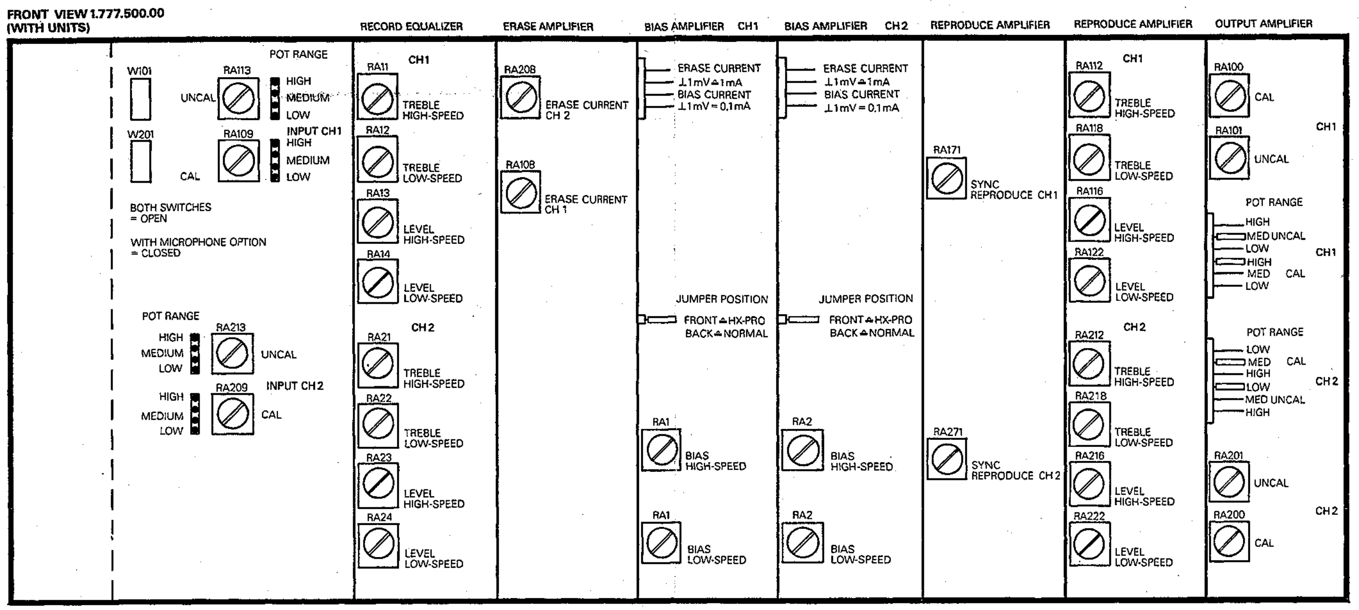

FRONT VIEW 1.777.500.00
(WITH UNITS)
RECORD EQUALIZER
ERASE AMPLIFIER
BIAS AMPLIFIER CH1
BIAS AMPLIFIER CH2
REPRODUCE AMPLIFIER
REPRODUCE AMPLIFIER
OUTPUT AMPLIFIER
W101
W201
RA113
UNCAL
POT RANGE
HIGH
MEDIUM
LOW
RA109
CAL
INPUT CH1
HIGH
MEDIUM
LOW
BOTH SWITCHES = OPEN
WITH MICROPHONE OPTION = CLOSED
POT RANGE
HIGH
MEDIUM
LOW
RA213
UNCAL
RA209
INPUT CH2
CAL
CH1
RA11 TREBLE HIGH-SPEED
RA12 TREBLE LOW-SPEED
RA13 LEVEL HIGH-SPEED
RA14 LEVEL LOW-SPEED
CH2
RA21 TREBLE HIGH-SPEED
RA22 TREBLE LOW-SPEED
RA23 LEVEL HIGH-SPEED
RA24 LEVEL LOW-SPEED
RA208 ERASE CURRENT CH 2
RA108 ERASE CURRENT CH 1
ERASE CURRENT ⊥1mV≙1mA
BIAS CURRENT ⊥1mV=0,1mA
JUMPER POSITION
FRONT≙HX-PRO
BACK≙NORMAL
RA1 BIAS HIGH-SPEED
RA1 BIAS LOW-SPEED
RA2 BIAS HIGH-SPEED
RA2 BIAS LOW-SPEED
RA171 SYNC REPRODUCE CH1
RA271 SYNC REPRODUCE CH2
CH1
RA112 TREBLE HIGH-SPEED
RA118 TREBLE LOW-SPEED
RA116 LEVEL HIGH-SPEED
RA122 LEVEL LOW-SPEED
CH2
RA212 TREBLE HIGH-SPEED
RA218 TREBLE LOW-SPEED
RA216 LEVEL HIGH-SPEED
RA222 LEVEL LOW-SPEED
RA100 CAL
RA101 UNCAL
CH1
POT RANGE
HIGH
MED UNCAL
LOW
HIGH
MED CAL
LOW
CH1
POT RANGE
LOW
MED CAL
HIGH
LOW
MED UNCAL
HIGH
CH2
RA201 UNCAL
RA200 CAL
CH2

Fig 20

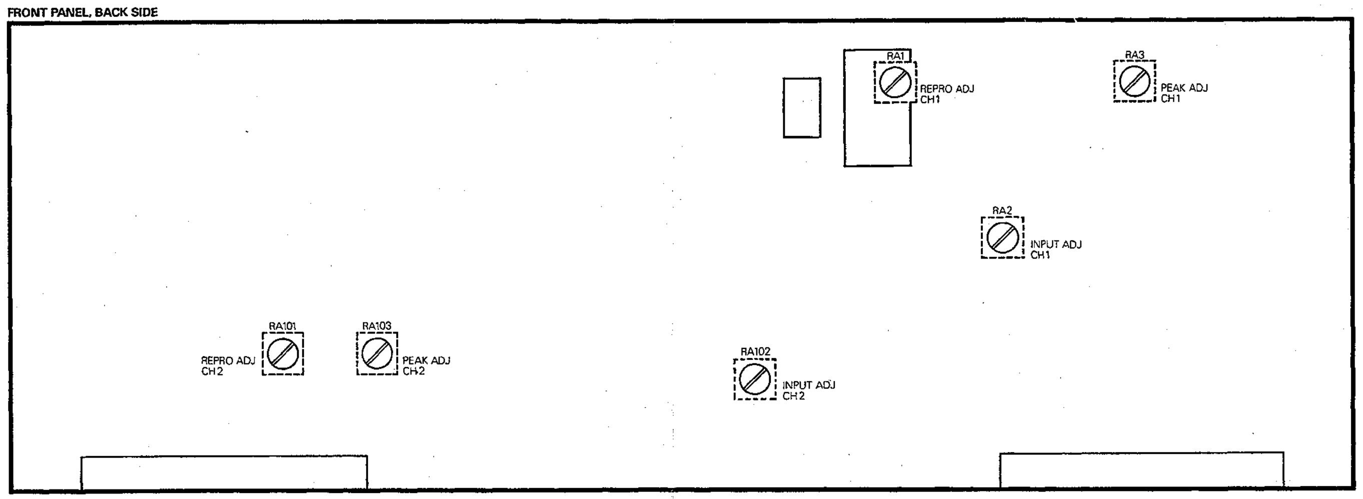
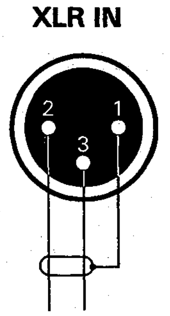
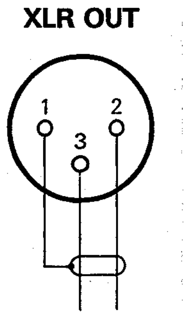
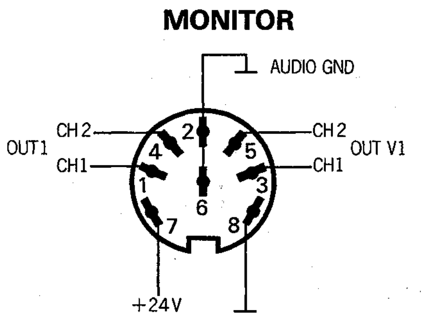

FRONT PANEL, BACK SIDE
RA1 REPRO ADJ CH1
RA3 PEAK ADJ CH1
RA2 INPUT ADJ CH1
RA101 REPRO ADJ CH2
RA103 PEAK ADJ CH2
RA102 INPUT ADJ CH2

Fig 21






MONITOR
AUDIO GND
OUT1
CH2
CH1
OUT V1
CH2
CH1
2
4
5
1
3
6
7
8
+24V

4.8 MESURE DE DIVERSES CARACTERISTIQUES

4.8.1 Taux de distorsion sur bande

La mesure du taux de distorsion pour magnétophones à bande exige un filtre K3 (3e harmonique). La fréquence de générateur BF (500 Hz) doit être choisie en fonction du filtre disponible (fréquence du filtre: 1500 Hz).
La mesure se fait en fonction du niveau maximum.

- Relier le générateur BF à l'entrée INPUT CH1 CH2.
- Régler la fréquence.
- Relier le pont de mesure de distorsion à la sortie.
- Mettre une bande neuve et faire démarrer l'enregistrement. Mesurer le facteur de distorsion; les valeurs de référence sont données dans les caractéristiques techniques.

4.8.2 Rapport signal/bruit de fond sur bande

- Les rapports signal/bruit de fond sont indiqués par rapport au niveau maximal.

Vitesse	IEC	NAB
9,5 cm/s	400nW/m	400nW/m (0 VU +3,8dB)
19 cm/s	514nW/m	514nW/m (0 VU +6,0 dB)
38 cm/s	514nW/m	514nW/m (0 VU +6,0 dB)

Pour éviter les erreurs de mesure par des inductions HF, la mesure se fait au moyen d'une bande effacée sur l'appareil.

- Relier le millivoltmètre BF à la sortie LINE OUTPUT CH1 (CH2).
- Faire démarrer l'appareil en reproduction et mesurer le rapport signal/bruit de fond avec le filtre correspondant. Si les valeurs ne sont pas atteintes, démagnétiser à nouveau soigneusement les guides de bande et les têtes.

4.8.3 Efficacité d'effacement

Pour mesurer l'efficacité d'effacement, on enregistre une fréquence BF qui est ensuite effacée. L'enregistrement restant sur la bande est mesuré. La mesure se fait par rapport au niveau maximal.

- Présélectionner la fréquence de générateur BF de 1 kHz.
- Relier le millivoltmètre BF à OUTPUT CH1 (CH2), filtre enclenché. Relier le générateur BF à INPUT CH1 (CH2), 0 VU, +6 dB.
- Poser une bande neuve, faire démarrer l'enregistrement et faire un bref enregistrement. Mettre la machine sur STOP et rebobiner au début de l'enregistrement.
- Faire démarrer l'appareil en reproduction et mesurer l'efficacité d'effacement.

4.8.4 Diaphonie mono

Pour cette mesure, il est recommandé d'utiliser une bande magnétique neuve. La mesure se fait par rapport au volume maximal.
Mettre l'appareil en mode CAL.

- Relier le générateur BF (1 kHz) à LINE INPUT CH1. Poser une bande et faire un enregistrement d'environ 1 minute (CH1 seulement)
- Rebobiner la bande au début de l'enregistrement.
- Relier un voltmètre sélectif à LINE OUTPUT CH2.
- Mettre l'appareil en reproduction et mesurer la diaphonie CH1 -> CH2.
- Pour enregistrer le canal droit, faire avancer la bande à l'endroit sans enregistrement.
- Relier le générateur BF à LINE INPUT CH2. Répéter le même enregistrement de CH2 sur CH1.
- Relier un voltmètre sélectif à LINE OUTPUT CH1.
- Mettre l'appareil en reproduction et mesurer la diaphonie CH2 -> CH1.

4.8.5 Diaphonie stéréo

La mesure se fait par rapport au niveau maximal. Pour la mesure de la diaphonie stéréo:

- Relier le générateur BF à LINE INPUT CH1 et un voltmètre sélectif à LINE OUTPUT CH2.
- Régler le générateur BF à 1 kHz à niveau maximal.
- Faire démarrer l'appareil en enregistrement (CH1 + CH2) et mesurer le niveau d'affaiblissement de diaphonie sur CH2.
- Relier le générateur BF à LINE INPUT CH2 et un voltmètre sélectif à LINE OUTPUT CH2. Faire un enregistrement et mesurer l'affaiblissement de diaphonie sur CH1.

4.8.6 Pleurage

Les valeurs indiquées dans les caractéristiques techniques doivent être mesurées au moyen d'un appareil de mesure de pleurage selon DIN 45507.

FRONT VIEW 1.777.500.00
(WITH UNITS)

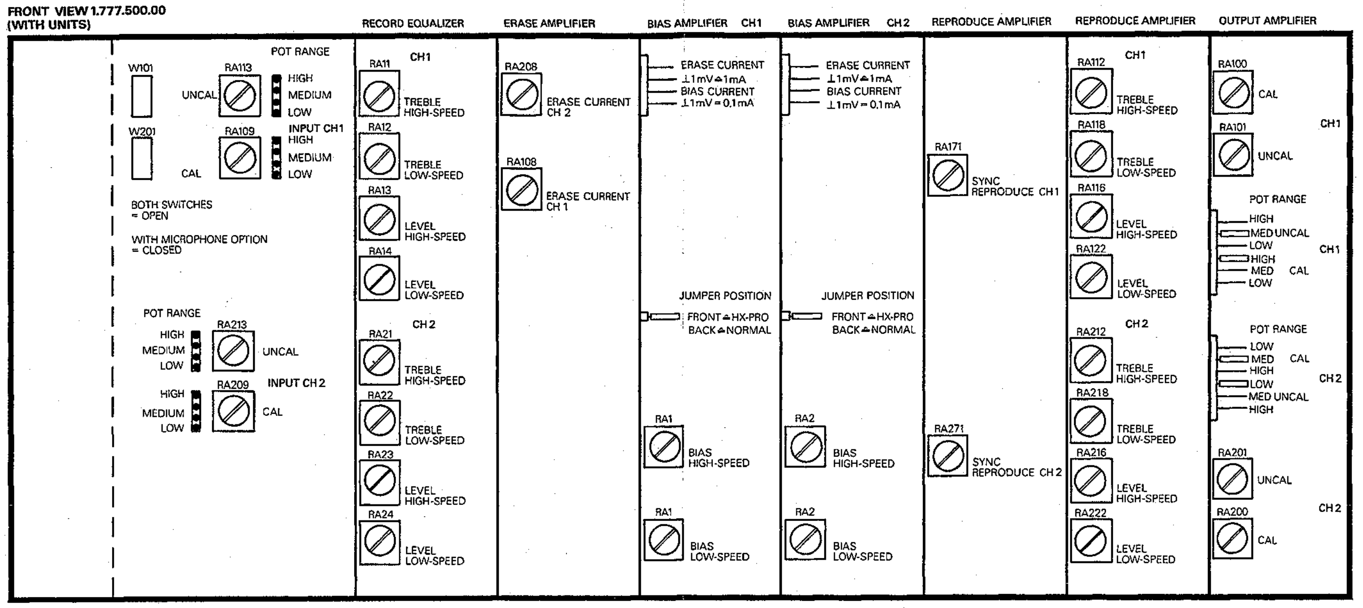

RECORD EQUALIZER
ERASE AMPLIFIER
BIAS AMPLIFIER CH1
BIAS AMPLIFIER CH2
REPRODUCE AMPLIFIER
REPRODUCE AMPLIFIER
OUTPUT AMPLIFIER
W101
W201
RA113
UNCAL
RA109
CAL
POT RANGE
HIGH
MEDIUM
LOW
INPUT CH1
BOTH SWITCHES = OPEN
WITH MICROPHONE OPTION = CLOSED
RA213
RA209
UNCAL
INPUT CH 2
CAL
CH1
RA11 TREBLE HIGH-SPEED
RA12 TREBLE LOW-SPEED
RA13 LEVEL HIGH-SPEED
RA14 LEVEL LOW-SPEED
CH 2
RA21 TREBLE HIGH-SPEED
RA22 TREBLE LOW-SPEED
RA23 LEVEL HIGH-SPEED
RA24 LEVEL LOW-SPEED
RA208 ERASE CURRENT CH 2
RA108 ERASE CURRENT CH 1
ERASE CURRENT
⊥1mV≙1mA
BIAS CURRENT
⊥1mV=0,1mA
JUMPER POSITION
FRONT≙HX-PRO
BACK≙NORMAL
RA1 BIAS HIGH-SPEED
RA1 BIAS LOW-SPEED
RA2 BIAS HIGH-SPEED
RA2 BIAS LOW-SPEED
RA171 SYNC REPRODUCE CH1
RA271 SYNC REPRODUCE CH 2
RA112 TREBLE HIGH-SPEED
RA118 TREBLE LOW-SPEED
RA116 LEVEL HIGH-SPEED
RA122 LEVEL LOW-SPEED
RA212 TREBLE HIGH-SPEED
RA218 TREBLE LOW-SPEED
RA216 LEVEL HIGH-SPEED
RA222 LEVEL LOW-SPEED
RA100 CAL
RA101 UNCAL
HIGH
MED UNCAL
LOW
HIGH
MED CAL
LOW
LOW
MED CAL
HIGH
LOW
MED UNCAL
HIGH
RA201 UNCAL
RA200 CAL
CH1
CH2

Fig 20

FRONT PANEL, BACK SIDE

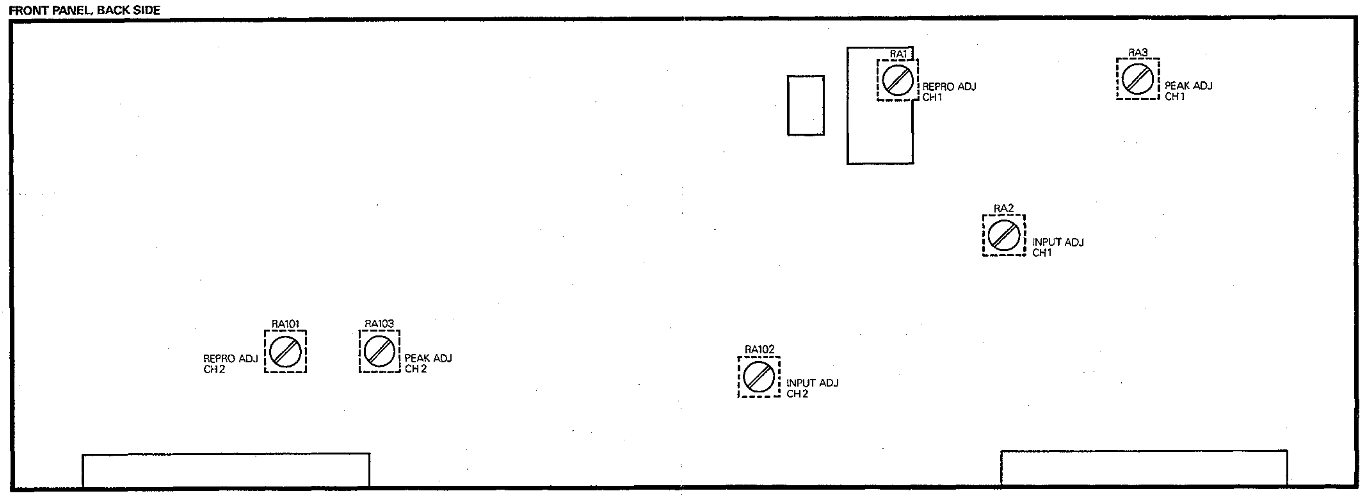
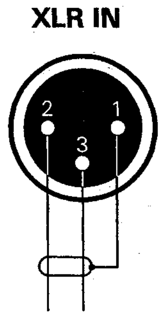
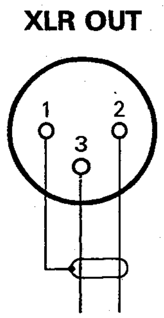
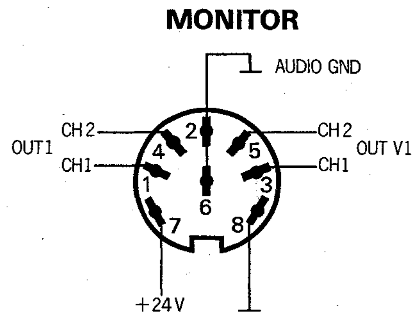

RA1 REPRO ADJ CH1
RA3 PEAK ADJ CH1
RA2 INPUT ADJ CH1
RA101 REPRO ADJ CH2
RA103 PEAK ADJ CH2
RA102 INPUT ADJ CH2

Fig 21






MONITOR
AUDIO GND
OUT1
CH2
CH1
CH2
CH1
OUT V1
1
2
3
4
5
6
7
8
+24V

5. CARACTERISTIQUES TECHNIQUES

Toutes les caractéristiques audio spécifiques à la bande sont données pour les types suivants:

- Version IEC: AGFA PEM 468
- Version NAB: 3M 226

Type d'appareil: magnétophone à 2 cannaux

Bande: 1/4" (6,35 mm)

Mécanisme: mécanisme à 3 moteurs: 2 moteurs AC réglés, 1 moteur de cabestan à commutation Hall réglage électronique.

Vitesses de défilement: 9,5/19, 19/38 ou 9,5/38 cm/s à sélection par commutateurs internes.
Dérive de la vitesse nominale: ±0.2%
Plage Varispeed: -33% à +50% de la vitesse nominale

Pleurage: (DIN 45507)		diamètre de noyau ≥ 10cm	diamètre de noyau ≥ 6cm
	à 9,5 cm/s	< 0,10 %	< 0,1 %
	à 19 cm/s	< 0,07 %	< 0,1 %
	à 38 cm/s	< 0,05 %	< 0,1 %

Glissement: max. 0,2 %
Temps de démarrage selon DIN: max. 500 ms à 38 cm/s
Temps de robinage: env. 130 s pour bande 1100 m
env. 90 s por bande 760 m

Dimensions des bobines: diamètre max. 265 mm

Commande du mécanisme: commandé par logique µP, avec fin de bande, état du galet de compteur et de la position du levier de tension de bande. Possibilité de Tape-Dump et Fader Start.

Comptuer de bande: indication en temps réel en heures, minutes et secondes conformément à la vitesse de bande choisie.
Précision: 0,25%
Zero-Locator, Address-Locator et mode de boucle possibles.

Corrections: NAB et IEC comme unités enfichables dans les circuits d'enregistrement et de reproduction.

NAB	9,5 cm/s:	90 - 3180 µs
	19 cm/s:	50 - 3180 µs
	38 cm/s:	50 - 3180 µs
IEC	9,5 cm/s:	90 - 3180 µs
	19 cm/s:	70 µs
	38 cm/s:	35 µs

Courbe de résponse: (sur bande, à -20 VU)

à 9,5 cm/s	30 Hz..14 kHz	± 2 dB
	50 Hz.. 8 kHz	± 1 dB
à 19 cm/s	30 Hz..18 kHz	± 2 dB
	50 Hz..12 kHz	± 1 dB
à 38 cm/s	30 Hz..22 kHz	± 2 dB
	50 Hz..16 kHz	± 1 dB

Courbe de résponse en reproduction Sync:

à 9,5 cm/s:	100 Hz.. 5 kHz	+2/-3 dB
à 19 cm/s:	100 Hz.. 8 kHZ	+2/-3 dB
à 38 cm/s:	100 Hz..12 kHz	+2/-3 dB

Niveau maximal d'enregistrement: 514 nWb/m, correspondant à +6 dB au-dessus de 0 VU

Indicatuer de niveau: VU-mètre selon norme ASA avec affichage de crête LED pour niveaux de: +6, +9, +12 dB

Taux de distorsion harmonique:	(k3 at 1 kHz)	
	9,5 cm/s (400 nWb/m)	< 1,5 %
	19 cm/s (514 nWb/m)	< 1,2 %
	38 cm/s (514 nWb/m)	< 1,0 %
Rapport signal/bruit:	(sur bande)	
		évaluation linéaire/A IEC 179
Version IEC:	9,5 cm/s (400 nWb/m)	> 56 dB / 61 dB
	19 cm/s (514 nWb/m)	> 58 dB / 64 dB
	38 cm/s (514 nWb/m)	> 59 dB / 65 dB
		évaluation linéaire/A IEC 179
Version NAB:	9,5 cm/s (400 nWb/m)	> 56 dB / 61 dB
	19 cm/s (514 nWb/m)	> 60 dB / 65 dB
	38 cm/s (514 nWb/m)	> 59 dB / 64 dB
Affaiblissement de diaphonie:	stéréo à 1 kHz	> 50 dB
	mono à 1 kHz	> 70 dB
Efficacité d'effacement:	à 19 cm/s	meilleur que -80 dB
	à 38 cm/s	meilleur que -75 dB
Entrées par canal:	(0 dBu = 0,775 V)	
LINE IN:	ligne symétrique (XLR) avec transfo de séparation	
	impédance d'entrée	> 5 kΩ
	CAL (IEC): pour 514 nWb/m	+ 6 dBu
	plage de réglage	-10...+16 dBu
	CAL (NAB): pour Operation Level (0 VU)	+ 4 dBu
	plage de réglage	-10...+16 dBu
	UNCAL: augmentation possible chaque fois de +10 dB each.	
	niveau max.: pour f > 40 Hz	+22 dBu
Entrées micro:	(montage ultérieur possible)	
	entrées symétrique (XLR) avec transfo de séparation	
Impédance d'entrée:	40 Hz..15 kHz	> 1,2 kΩ
Sensitivity:	position "LO"	-70 dBu ... -36 dBu
	position "HI"	-38 dBu ... - 8 dBu
	niveau max	- 8 dBu
Soties par canal:	(0 dBu = 0,775 V)	
LINE OUT:	sortie symétrique (XLR) avec transfo de séparation	
	impédance de sortie	80 Ω
	CAL (IEC): pour 514 nWb/m, 600 Ω	+ 6 dBu
	plage de réglage	-20...+15 dBu
	CAL (NAB): pour OP-level (0 VU), 600 Ω	+ 4 dBu
	plage de réglage	-20...+15 dBu
	UNCAL: augmentation possible chaquefois de +10 dB each.	
Niveau max.:	sur 600 Ω	+22 dBu
	sur 200 Ω	+20 dBu
Phones:	prise jack 0 6,3 mm protégée contre le court-circuit	
Tension de sortie	à 514 nWb/m	max. 5.6 V
	pour 0 VU	2.8 V
	impédance de sortie:	220 Ω
Monitor:	prise DIN 8 pôles	
Tension de sortie:	à 514 nWb/m	max. 1.8 V
	pour alimentation externe	+ 24 V
	impédance de sortie:	4
.7 kΩ		
RS-232:	prise à 7 pôles, interface sérielle 9600 Bd, alimentation 24 V pour télécommande manuelle ou Locator externe. duplex, ligne à 3 files (GND, Tx, Rx), 1 bit start, 1 bit stop, 8 bits de données, pas de parité, handshaking logiciel (Xon, Xoff	
Fader/Sync:	prise DIN 8 pôles pour Fader Start et synchronisation externe du motuer de cabestan, raccord pour tête de lecture de données	
Racord réseau:	à 3 pôles avec terre de protection	
Alimentation:	(sélécteur de tension)	
	100, 120, 140, 200, 220, 240 V AC	50 ... 60 Hz

Consommation:	max. 125 W	
Fusible de réseau:	100 ... 140 V:T 2,5 A / 250 V (SLOW)	
	200 ... 240 V:T 1,25A / 250 V (SLOW)	
Conditions de service:	température ambiante	+10°C ...+40°C
	humidité relative (DIN 40040)	Category F
Position de service:	quelconque entre l'horizontale et la verticale	
Poids:	suppport de bâti compris	23 kg
Dimensions extérieures:	avec support de bâti (L·H·P)	482·443·202 mm
	sans support de bâti	434·443·202 mm
	largeur de montage avec support	442 mm

Variante $^{1}/_{4}$ - piste:

Rapport signal / bruit	(mesuré après bande)	
		linéaire / pondéré A IEC179
Version IEC:	9,5 cm/s (400 nWb/m)	> 52 dB / 57 dB
4 pistes	19 cm/s (514 nWb/m)	> 54 dB / 60 dB
	38 cm/s (514 nWb/m)	> 55 dB / 61 dB
		linéaire / pondéré A IEC179
Version NAB:	9,5 cm/s (400 nWb/m)	> 52 dB / 57 dB
4 pistes	19 cm/s (514 nWb/m)	> 56 dB / 61 dB
	38 cm/s (514 nWb/m)	> 55 dB / 60 dB

Variante MONO:	Réglages des niveaux	NAB	IEC
	Entreé-Sortie-Ligne:		
	Entreé	1,23V/+4dBu	1,55V/+6dBu
	Moniteur	0,39V/-6dBu	0,775V/0dBu
	Sortie	1,23V/+4dBu	1,55V/+6dBu
	Lecture de la bande de mesure:	3,75 7,5 15ips	9,5 19 38cm
	Flux nWb/m	200 200 200	250 320 320
	Moniteur	0,39V/-6dBu	0,775V/0dBu
	Sortie	1,23V/+4dBu	1,55V/+6dBu
	Indication VU - mètre	0VU	+6VU
	Réglage du niveau d'enregistrement sur ligne:		
	Entreé - Bande - Sortie	1,23V/+4dBu	1,55V/+6dBu
	Indication 0VU sur ligne:		
	Entreé - Sortie	1,23V/+4dBu	0,775V/0dBu
	Réglage de la LED Peak sur entreé ligne avec:		
	LED +6 dB	2,45V/+10dBu	1,55V/+6dBu
	LED +9 dB	3,46V/+13dBu	2,18V/+9dBu
	LED +12dB	4,90V/+16dBu	3,1V/+12dBu

Modification réservées

6. DIAGRAMS AND LIST OF SUBASSEMBLIES

INHALT **Seite**

LOCATION OF ASSEMBLIES

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LOCATION OF JUMPERS AND ADJUSTING ELEMENTS		6/3
VU-PEAK BOARD ADJUSTING ELEMENTS		6/4

WIRING DIAGRAMS

WIRING BLOCK DIAGRAM		6/5
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LINE POTMETER OUTPUT	1.777.825.00	6/8
CONNECTION UNIT	1.777.830.00	6/9

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CPU BLOCK DIAGRAM		6/12
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CONTROL BOARD	1.777.400.22	6/19
TENSION ARM BOARD	1.777.211.00	6/23
TAPE MOVE SENSOR PCB	1.020.316.00	6/25
TAPE SENSOR BOARD	1.050.312.00	6/27
TACHO BOARD	1.777.250.00	6/29
CAPSTAN SERVO BOARD	1.777.410.21	6/31
CAPSTAN SERVO BOARD	1.777.412.21	6/35
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KEYBOARD	1.777.451.00	6/45

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RECORD EQUALIZER BOARD	1.777.540.00	6/57
RECORD SPEED BOARD 9.5/19 IEC	1.777.550.00	6/59
RECORD SPEED BOARD 19/38 IEC	1.777.552.00	6/61
RECORD SPEED BOARD 9.5/38 IEC	1.777.554.00	6/63
RECORD SPEED BOARD 19/38 NAB	1.777.558.00	6/67
RECORD SPEED BOARD 9.5/38 NAB	1.777.559.00	6/69
ERASE AMPLIFIER BOARD	1.777.560.81	6/71
BIAS CONTROL BOARD	1.777.570.81	6/73
PREAMPLIFIER BOARD	1.777.610.00	6/75
REPRODUCE EQUALIZER BOARD	1.777.620.00	6/77
REPRO SPEED BOARD 9.5/19 IEC	1.777.630.00	6/79
REPRO SPEED BOARD 19/38 IEC	1.777.632.00	6/81
REPRO SPEED BOARD 9.5/38 IEC	1.777.634.00	6/83
REPRO SPEED BOARD 9.5./19 NAB	1.777.636.00	6/85
REPRO SPEED BOARD 19/38 NAB	1.777.638.00	6/87
REPRO SPEED BOARD 9.5/38 NAB	1.777.639.00	6/89
OUTPUT AMPLIFIER BOARD	1.777.640.00	6/91
AUDIO SWITCH BOARD	1.777.462.00	6/93
AUDIO SWITCH BOARD	1.777.463.00	6/95
VU-PEAK BOARD	1.777.460.00	6/97

ABBREVIATIONS

A	assemblye
ANT	antenna
B	bulb
BA	battery, accumulator
BR'	optocoupler (bulb --> LDR)
C	capacitor
D	diode, DIAC
DL	LED light-emit. diode
DLQ	optocoupler (LED --> phototransistor)
DLR	optocoupler (LED --> LDR)
DLZ	LED-array, 7-segment-display
DP	photodiode
DZ	rectifier
E	electronic part
EF	headphones
F	fuse
FL	filter
H	head (sound-/erase-)
HC	hybrid circuit
HE	hall element
IC	integrated circuit
J	jack (female)
JS	jumper
K	relay, contactor
L	coil, inductance
LS	loudspeaker
M	motor
ME	meter
MIC	microphone
MP	mechanical part
P	plug (male)
PU	pick up
Q	transistor, FET, thyristor, TRIAC
QP	phototransistor
QPZ	phototransistor-array
R	resistor
RP	light depend. resistor
RT	temp. sensit. resistor
RZ	resistor array
S	switch
T	transformator
TL	delay line
TP	test point
W	wire, stranded wire
X	socket, holder
XB	lamp socket
XF	fuse holder
XIC	IC-socket
Y	quarz, piezoelement
Z	network, array

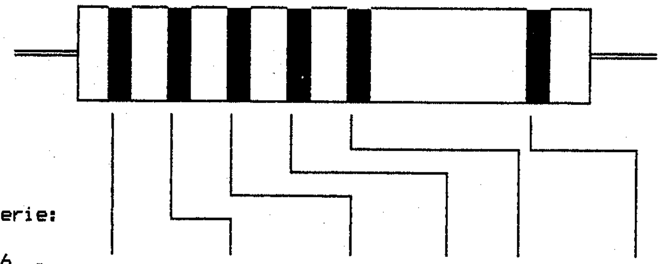
POWERS OF TEN

designation	abbrev.	value
Tera-	T	10^{12}
Giga-	G	10^{9}
Mega-	M	10^{6}
Kilo-	k	10^{3}
Milli-	m	10^{-3}
Mikro-	μ	10^{-6}
Nano-	n ($m\mu$)	10^{-9}
Pico-	p ($\mu\mu$)	10^{-12}
Femto-	f	10^{-15}

() = USA used designation

CODE LETTERS AND COLORS

Resistors



serie:						
E6 E12 E24	1.digit	2.digit	mult.	tol.	---	---
E48	1.digit	2.digit	3.digit	mult.	tol.	tc

color	digit	multiplier	tolerance	tc
gold	-	0,01	5 %	-
silver	-	0,1	10 %	-
black	0	1	-	-
brown	1	10	1 %	$100\cdot10^{-6}$/K
red	2	100	2 %	$50\cdot10^{-6}$/K
orange	3	1 k	-	$15\cdot10^{-6}$/K
yellow	4	10 k	-	$25\cdot10^{-6}$/K
green	5	100 k	0,5 %	-
blue	6	1 M	0,25 %	-
violet	7	10 M	0,1 %	-
grey	8	-	-	-
white	9	-	-	-

No tc-coding = $50\cdot10^{-6}$/K

CAPACITORS

The tolerance category is sometimes specified by a letter after the rated capacitance:

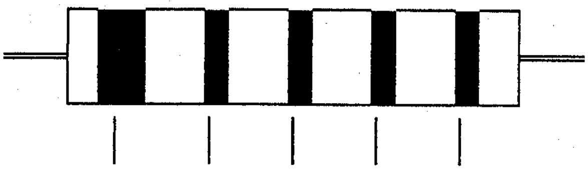
D = 0,5 %
F = 1 %
G = 2 %
J = 5 %
K = 10 %
M = 20 %

MOLDED RF COILS

A wide silver-colored ring and 4 thin, differently colored rings identify molded RF coils. The wide silver ring indicates the start of the counting direction. The second, third, and fouth ring indicate the inductance in micro Henry (µH), where two of the three rings represent the numeric value, the third one either a multiplier or the numeric value, the third one either a multiplier or the decimal point. In the latter case it has a golden color. The fifth ring identifies the tolerance in percent (±).

color	digit	multiplier	tolerance
gold	,	-	5 %
silver	-	-	10 %
blach	0	1	-
brown	1	10	1 %
red	2	100	2 %
orange	3	10^3	-
yellow	4	10^4	-
green	5	10^5	0,5 %
blue	6	10^6	-
violet	7	10^7	-
grey	8	10^8	-
white	9	10^9	-
without	-	-	20 %

examples:



silver gold* brown green silver = 0,15 µH
10 %

silver red gold* violet --- = 2,7 µH
20 %

silver grey red brown** gold = 820 µH
5 %

* Decimal point
** Multiplier

INDUCTORS, transformers on ferrite cores

Inductors and transformers on ferrite cores are marked with three colored dots (for color codes, refer to the table in the section "Resistors", the two left-hand columns). These dots represent the last three digits of the WILLY STUDER standard number, the largest of the standard number (1.022.---> are always the same.

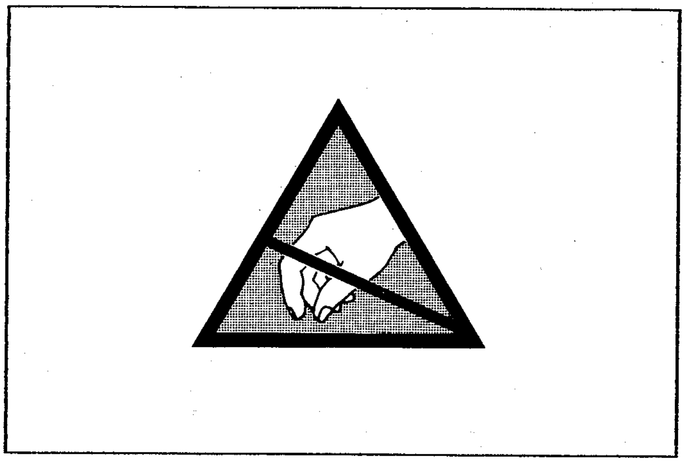
E.g.: Driver Transformer, 150 khz.
Standard number: 1.022.211
Color code: red (large dot), brown, brown

Terminal 1 of the winding form is usually identified by a lobe; if not the winding form features a yellow dot near terminal No. 1.

NOTE

Some of the order numbers contained in the following lists are used for production purposes only. The reference numbers may deviate for service purposes.
Electrical components such as resistors, capacitors, transistors, IC's etc. having no special unit-specific number and not identified respectively should be purchased locally.

ELECTROSTATICALLY SENSITIVE SEMICONDUCTOR DEVICES



MOS (Metal oxide semiconductor) devices are very sensitive to electrostatic charges. The following precautions should, therefore, be observed:

1. Electrostatically sensitive semiconductor devices and assemblies are stored and shipped in protective packing is identified with the label illustrated above.

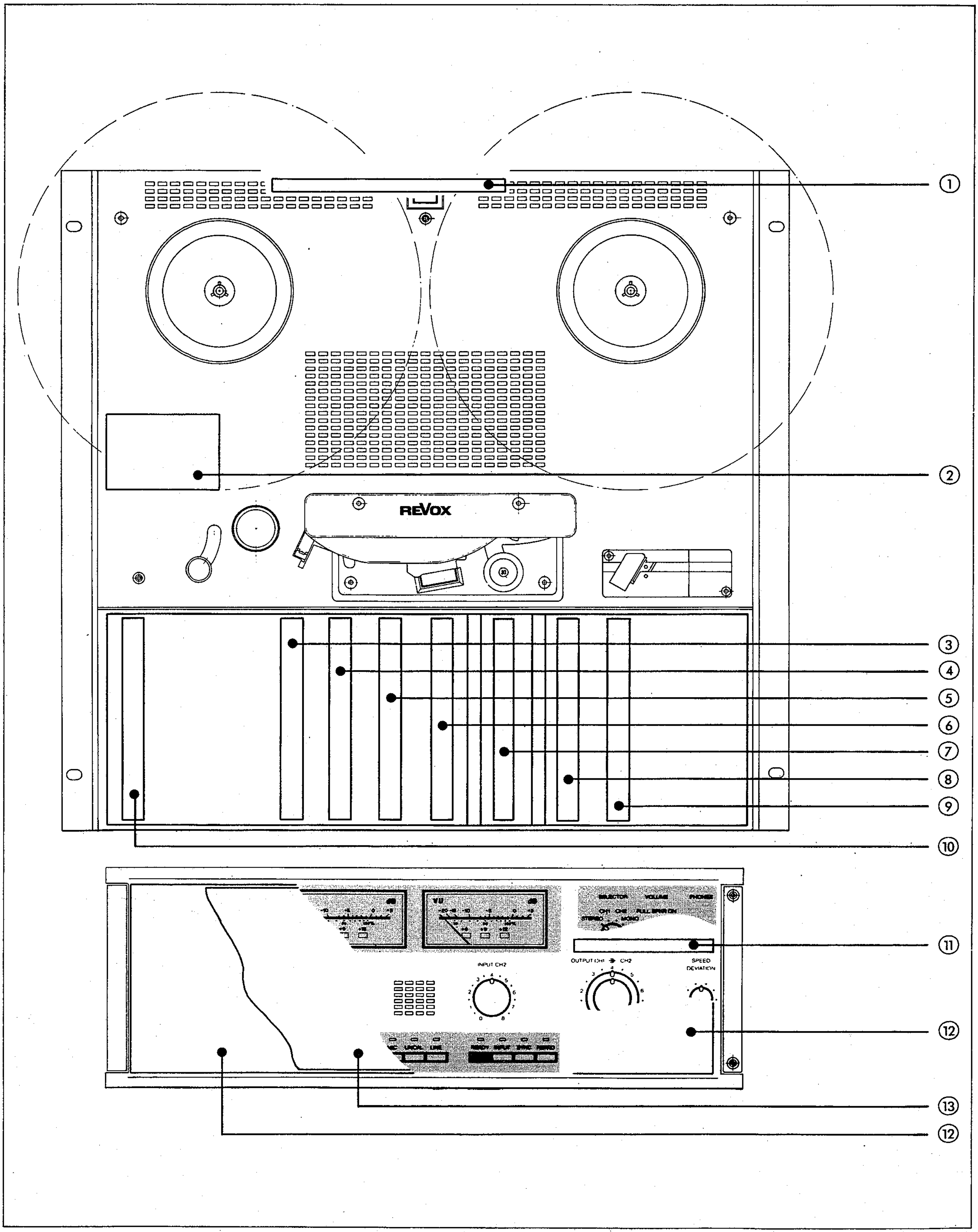
2. Strictly avoid contact of the connector pins with plastic bags and foils or other statically chargeable materials.

3. Ensure that your wrist is grounded before touching the connector pins.

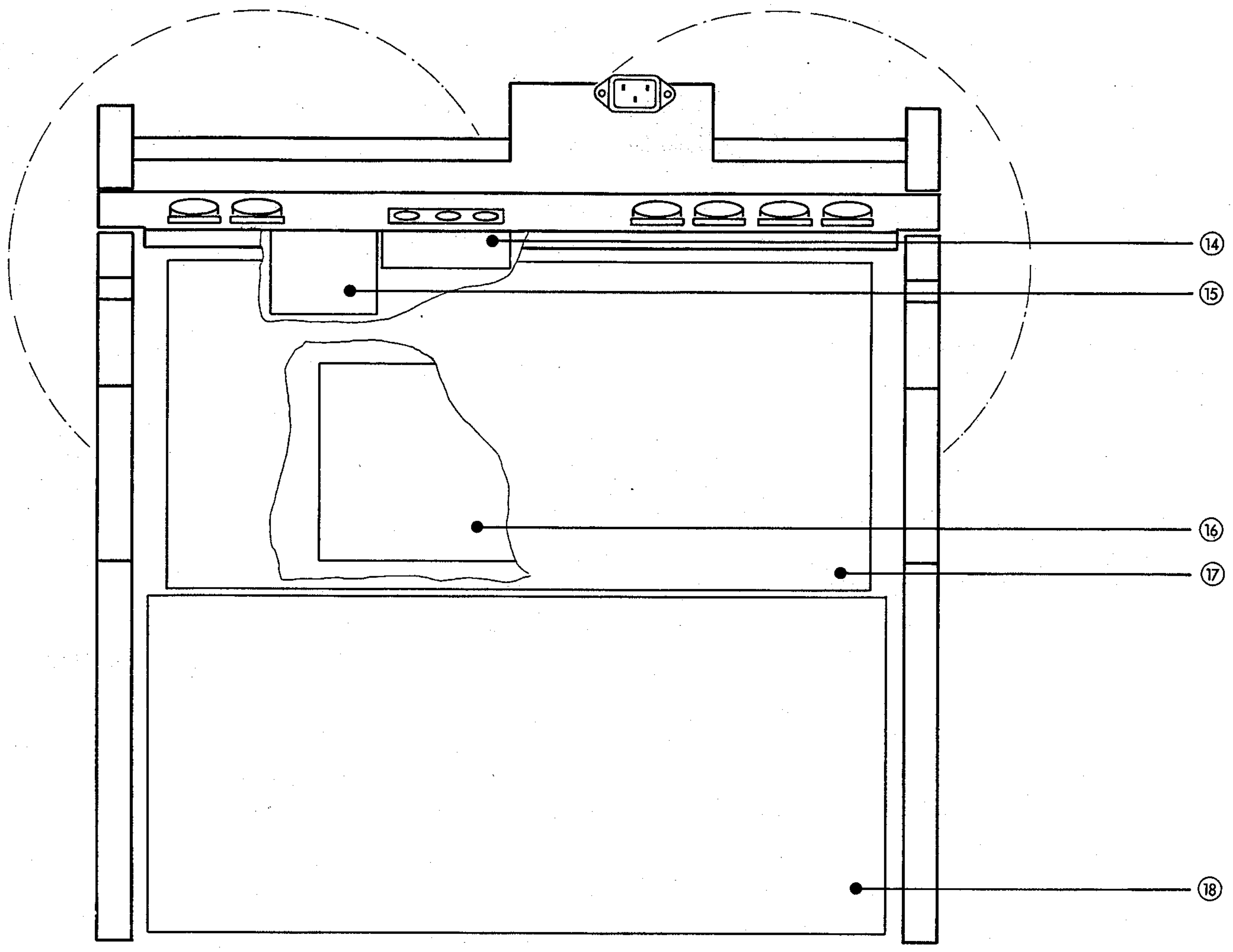
4. Use a grounded, conductive plastic pad as a work surface.

5. Never unplug or insert printed circuit boards while the equipment is under power! The equipment must have been switched off for at least 5 seconds before any PCBs are pulled out or inserted!

FRONT VIEW

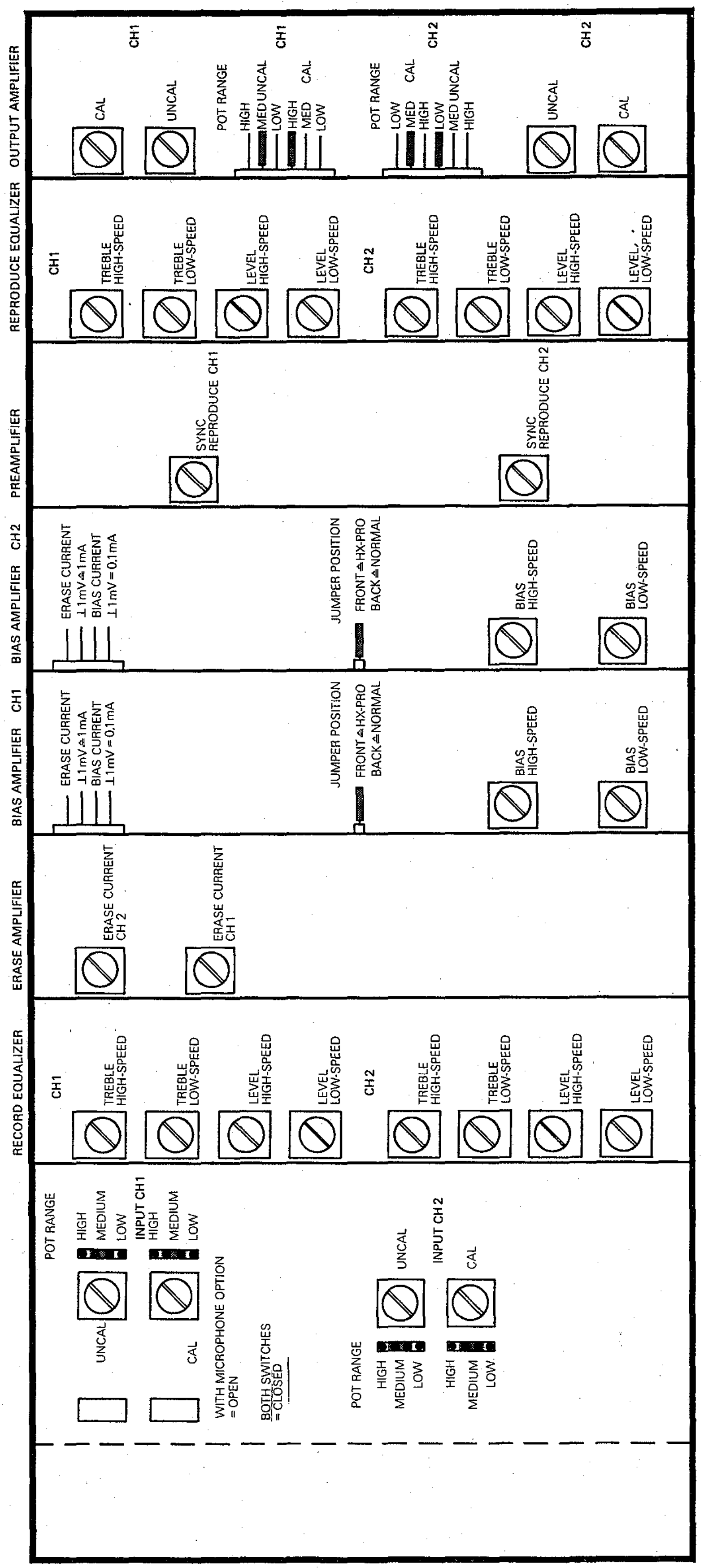

①
②
REVOX
③
④
⑤
⑥
⑦
⑧
⑨
⑩
VU
SELECTOR
VOLUME
PHONES
⑪
INPUT CH2
OUTPUT CH1 → CH2
SPEED DEVIATION
⑫
⑬
⑫

BACK VIEW



[1]	DISTRIBUTOR BOARD	1.777.320.00
[2]	TENSION ARM BOARD	1.777.211.00
[3]	RECORD EQUALIZER BOARD	1.777.540.00
	- RECORD SPEED BOARD 1.777.550.00 - .559.00	
[4]	ERASE AMPLIFIER BOARD	1.777.560.00
[5]	BIAS AMPLIFIER BOARD	1.777.570.00
[6]	BIAS AMPLIFIER BOARD	1.777.570.00
[7]	PREAMPLIFIER BOARD	1.777.610.00
[8]	REPRODUCE EQUALIZER BOARD	1.777.620.00
	- REPRO SPEED BOARD 1.777.630.00 - .639.00	
[9]	OUTPUT AMPLIFIER BOARD	1.777.640.00
[10]	MIC LINE SWITCH BOARD (Option)	1.777.520.00
[11]	SWITCH BOARD	1.777.462.00
[12]	KEYBOARD	1.777.450.00
[13]	VU-PEAK BOARD	1.777.460.00
[14]	CONNECTION BOARD	1.777.441.00
[15]	TACHO BOARD	1.777.250.00
[16]	CAPSTAN SERVO BOARD	1.777.410.20
	- FAST START BOARD 1.777.414.00	
[17]	CONTROL BOARD	1.777.400.22
[18]	AUDIO BASIS BOARD	1.777.500.81

LOCATION OF JUMPERS AND ADJUSTING ELEMENTS


OUTPUT AMPLIFIER
CH1
CAL
UNCAL
POT RANGE
HIGH
MED UNCAL
LOW
HIGH
MED
LOW
CAL
CH2
POT RANGE
LOW
MED
HIGH
LOW
MED UNCAL
HIGH
CAL
UNCAL
CAL
REPRODUCE EQUALIZER
CH1
TREBLE HIGH-SPEED
TREBLE LOW-SPEED
LEVEL HIGH-SPEED
LEVEL LOW-SPEED
CH2
TREBLE HIGH-SPEED
TREBLE LOW-SPEED
LEVEL HIGH-SPEED
LEVEL LOW-SPEED
PREAMPLIFIER
SYNC REPRODUCE CH1
SYNC REPRODUCE CH2
BIAS AMPLIFIER CH2
ERASE CURRENT
⊥1mV ≙ 1mA
BIAS CURRENT
⊥1mV = 0,1mA
JUMPER POSITION
FRONT ≙ HX-PRO
BACK ≙ NORMAL
BIAS HIGH-SPEED
BIAS LOW-SPEED
BIAS AMPLIFIER CH1
ERASE CURRENT
⊥1mV ≙ 1mA
BIAS CURRENT
⊥1mV = 0,1mA
JUMPER POSITION
FRONT ≙ HX-PRO
BACK ≙ NORMAL
BIAS HIGH-SPEED
BIAS LOW-SPEED
ERASE AMPLIFIER
ERASE CURRENT CH 2
ERASE CURRENT CH 1
RECORD EQUALIZER
CH1
TREBLE HIGH-SPEED
TREBLE LOW-SPEED
LEVEL HIGH-SPEED
LEVEL LOW-SPEED
CH2
TREBLE HIGH-SPEED
TREBLE LOW-SPEED
LEVEL HIGH-SPEED
LEVEL LOW-SPEED
POT RANGE
HIGH
MEDIUM
LOW
INPUT CH1
HIGH
MEDIUM
LOW
UNCAL
CAL
WITH MICROPHONE OPTION = OPEN
BOTH SWITCHES = CLOSED
UNCAL
INPUT CH 2
CAL
POT RANGE
HIGH
MEDIUM
LOW
HIGH
MEDIUM
LOW

FRONT VIEW 1.777.500.00 (WITH UNITS)

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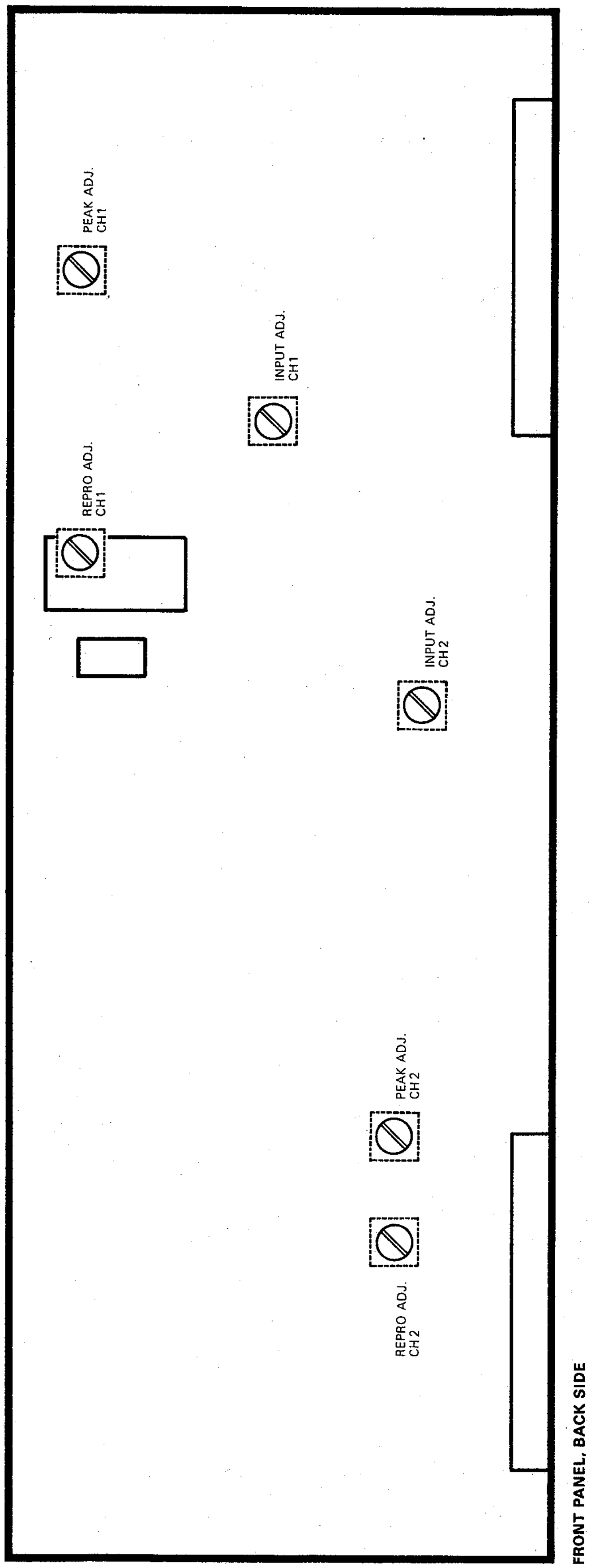
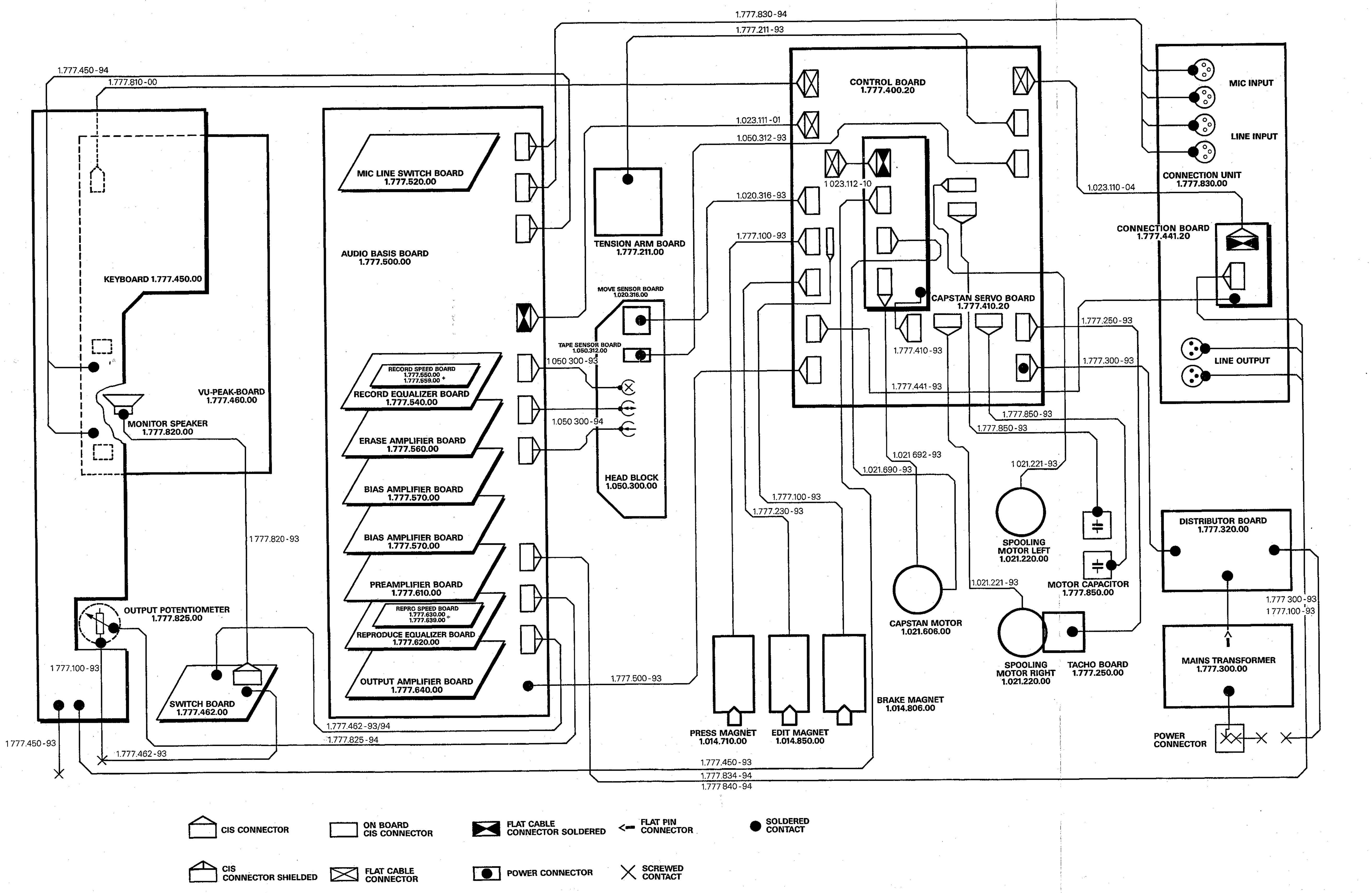
VU-PEAK BOARD ADJUSTING ELEMENTS


PEAK ADJ. CH1
INPUT ADJ. CH1
REPRO ADJ. CH1
INPUT ADJ. CH2
PEAK ADJ. CH2
REPRO ADJ. CH2
FRONT PANEL, BACK SIDE

WIRING BLOCK DIAGRAM


1.777.830-94
1.777.211-93
1.777.450-94
1.777.810-00
KEYBOARD 1.777.450.00
VU-PEAK-BOARD
1.777.460.00
MONITOR SPEAKER
1.777.820.00
OUTPUT POTENTIOMETER
1.777.825.00
1.777.820-93
1 777.100-93
SWITCH BOARD
1.777.462.00
1.777.450-93
1.777.462-93
MIC LINE SWITCH BOARD
1.777.520.00
AUDIO BASIS BOARD
1.777.500.00
RECORD SPEED BOARD
1.777.550.00 ÷
1.777.559.00
RECORD EQUALIZER BOARD
1.777.540.00
ERASE AMPLIFIER BOARD
1.777.560.00
BIAS AMPLIFIER BOARD
1.777.570.00
BIAS AMPLIFIER BOARD
1.777.570.00
PREAMPLIFIER BOARD
1.777.610.00
REPRO SPEED BOARD
1.777.630.00 ÷
1.777.639.00
REPRODUCE EQUALIZER BOARD
1.777.620.00
OUTPUT AMPLIFIER BOARD
1.777.640.00
1.777.462-93/94
1.777.825-94
1.777.500-93
TENSION ARM BOARD
1.777.211.00
MOVE SENSOR BOARD
1.020.316.00
TAPE SENSOR BOARD
1.050.312.00
1 050 300-93
1.050 300-94
HEAD BLOCK
1.050.300.00
1.023.111-01
1.050.312-93
1.020.316-93
1.777.100-93
CONTROL BOARD
1.777.400.20
1 023.112-10
CAPSTAN SERVO BOARD
1.777.410.20
1.777.410-93
1.777.441-93
1.777.250-93
1.777.300-93
1.777.850-93
1.777.850-93
1.023.110-04
1.021 692-93
1.021.690-93
1 021.221-93
1.777.100-93
1.777.230-93
MIC INPUT
LINE INPUT
CONNECTION UNIT
1.777.830.00
CONNECTION BOARD
1.777.441.20
LINE OUTPUT
SPOOLING
MOTOR LEFT
1.021.220.00
MOTOR CAPACITOR
1.777.850.00
1.021.221-93
CAPSTAN MOTOR
1.021.606.00
SPOOLING
MOTOR RIGHT
1.021.220.00
TACHO BOARD
1.777.250.00
DISTRIBUTOR BOARD
1.777.320.00
1.777 300-93
1 777.100-93
MAINS TRANSFORMER
1.777.300.00
POWER
CONNECTOR
PRESS MAGNET
1.014.710.00
EDIT MAGNET
1.014.850.00
BRAKE MAGNET
1.014.806.00
1.777.450-93
1.777.834-94
1.777 840-94
CIS CONNECTOR
ON BOARD
CIS CONNECTOR
FLAT CABLE
CONNECTOR SOLDERED
FLAT PIN
CONNECTOR
SOLDERED
CONTACT
CIS
CONNECTOR SHIELDED
FLAT CABLE
CONNECTOR
POWER CONNECTOR
SCREWED
CONTACT

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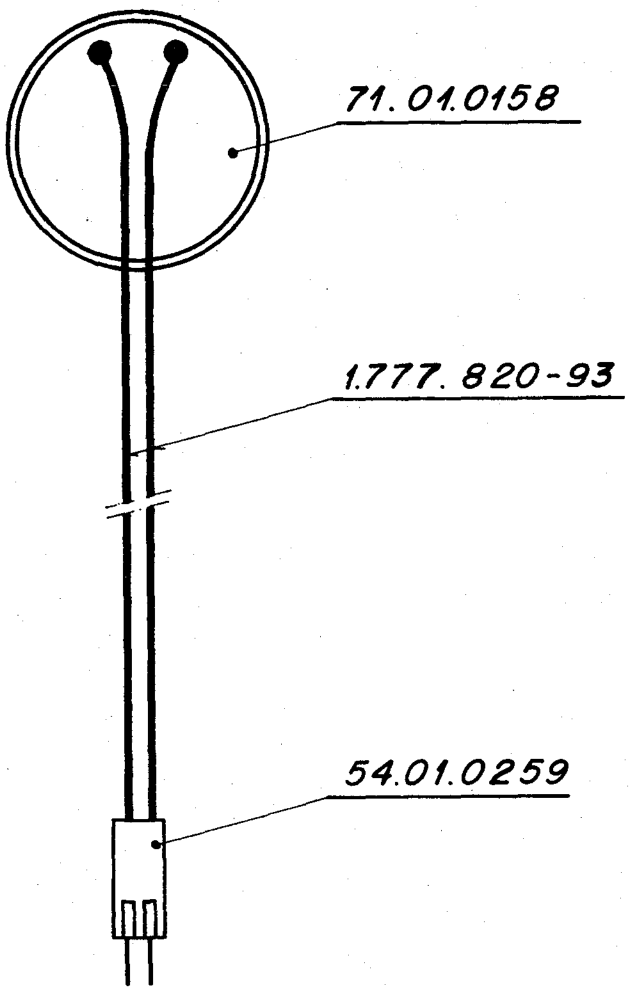
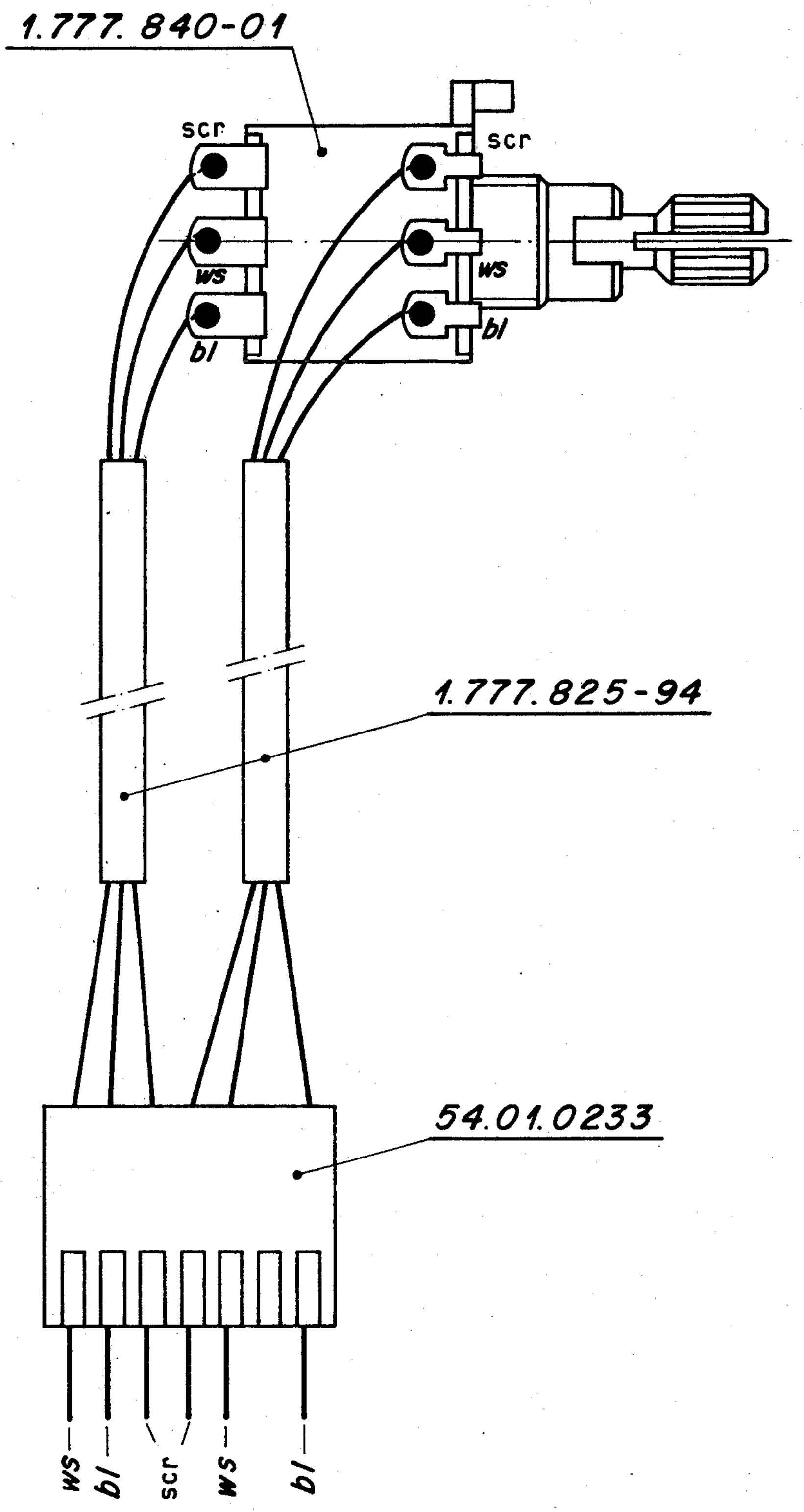
WIRE HARNESS MONITOR 1.777.820.00

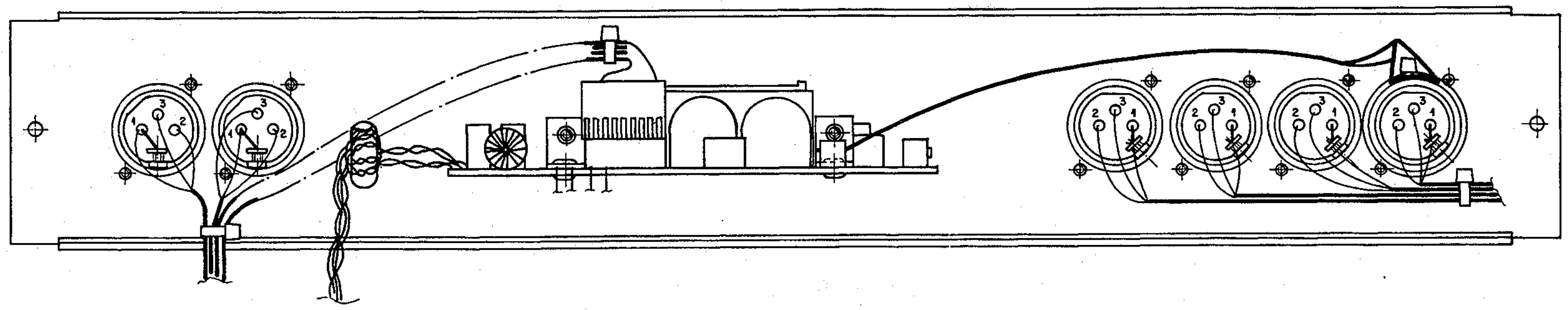

71.01.0158
1.777.820-93
54.01.0259

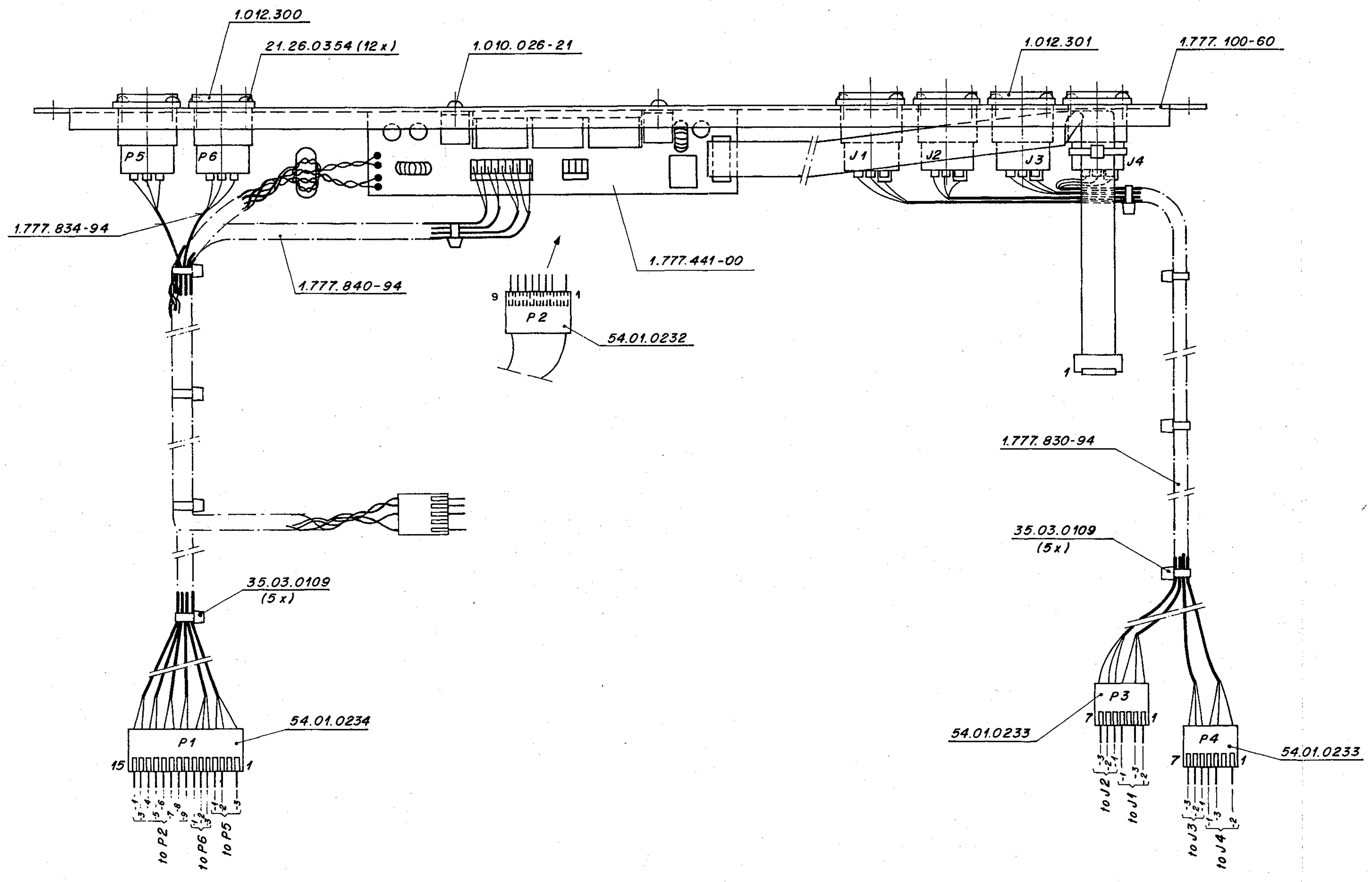
PUBLISHED 01/88

LINE POTMETER OUTPUT 1.777.825.00


1.777.840-01
scr
scr
ws
ws
bl
bl
1.777.825-94
54.01.0233
ws
bl
scr
ws
bl

CONNECTION UNIT 1.777.830.00




1.012.300
21.26.0354 (12x)
1.010.026-21
1.012.301
1.777.100-60
P5
P6
J1
J2
J3
J4
1.777.834-94
1.777.840-94
1.777.441-00
9
1
P2
54.01.0232
1
1.777.830-94
35.03.0109 (5x)
35.03.0109 (5x)
P1
15
1
54.01.0234
-1 -3 -4 -5 -6 -7 -8 -9 to P2
-1 -2 -3 to P6
-1 -2 -3 to P5
P3
7
1
54.01.0233
-3 -2 -1 to J2
-1 -3 -2 to J1
P4
7
1
54.01.0233
-3 -2 -1 to J3
-1 -3 -2 to J4

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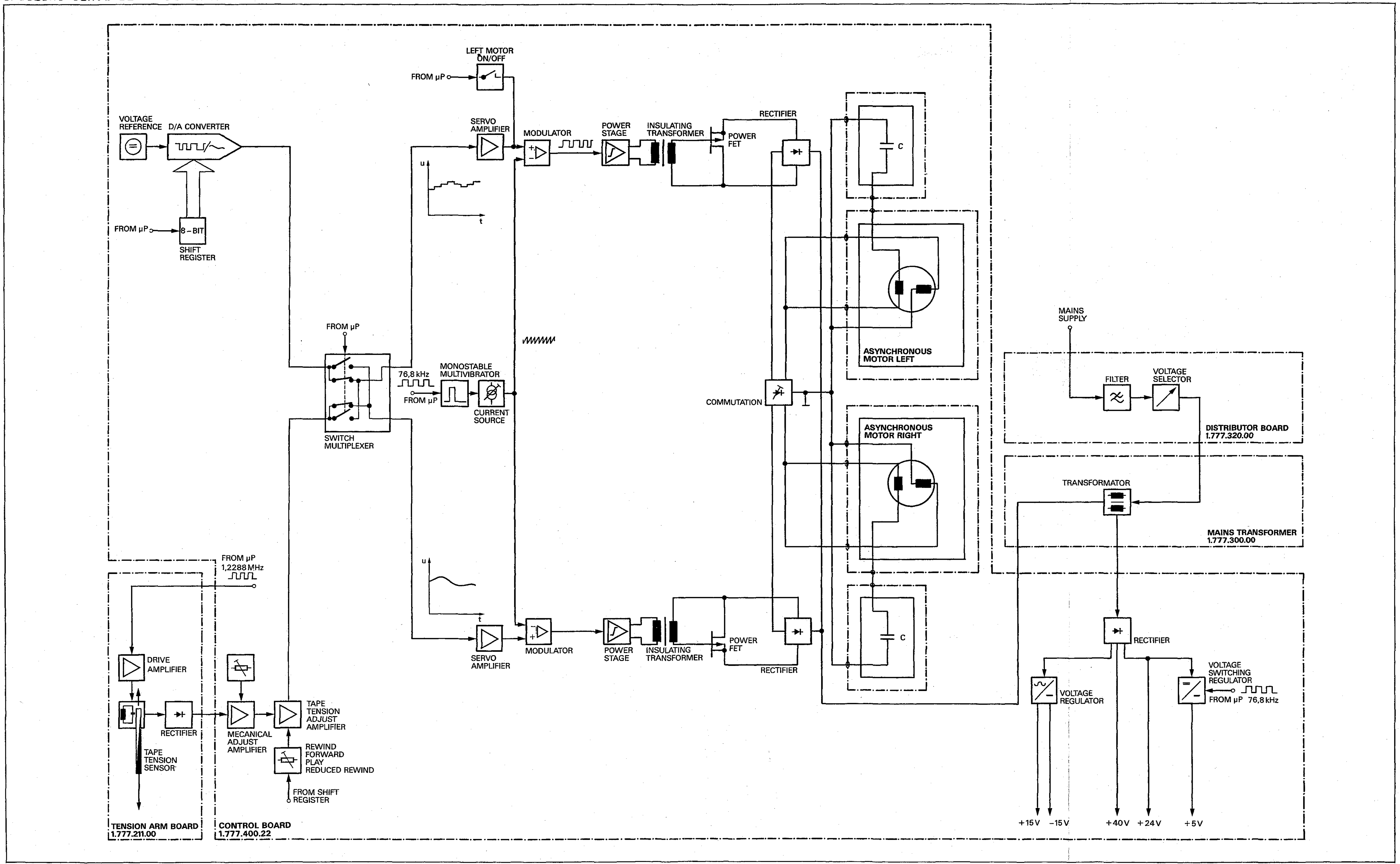
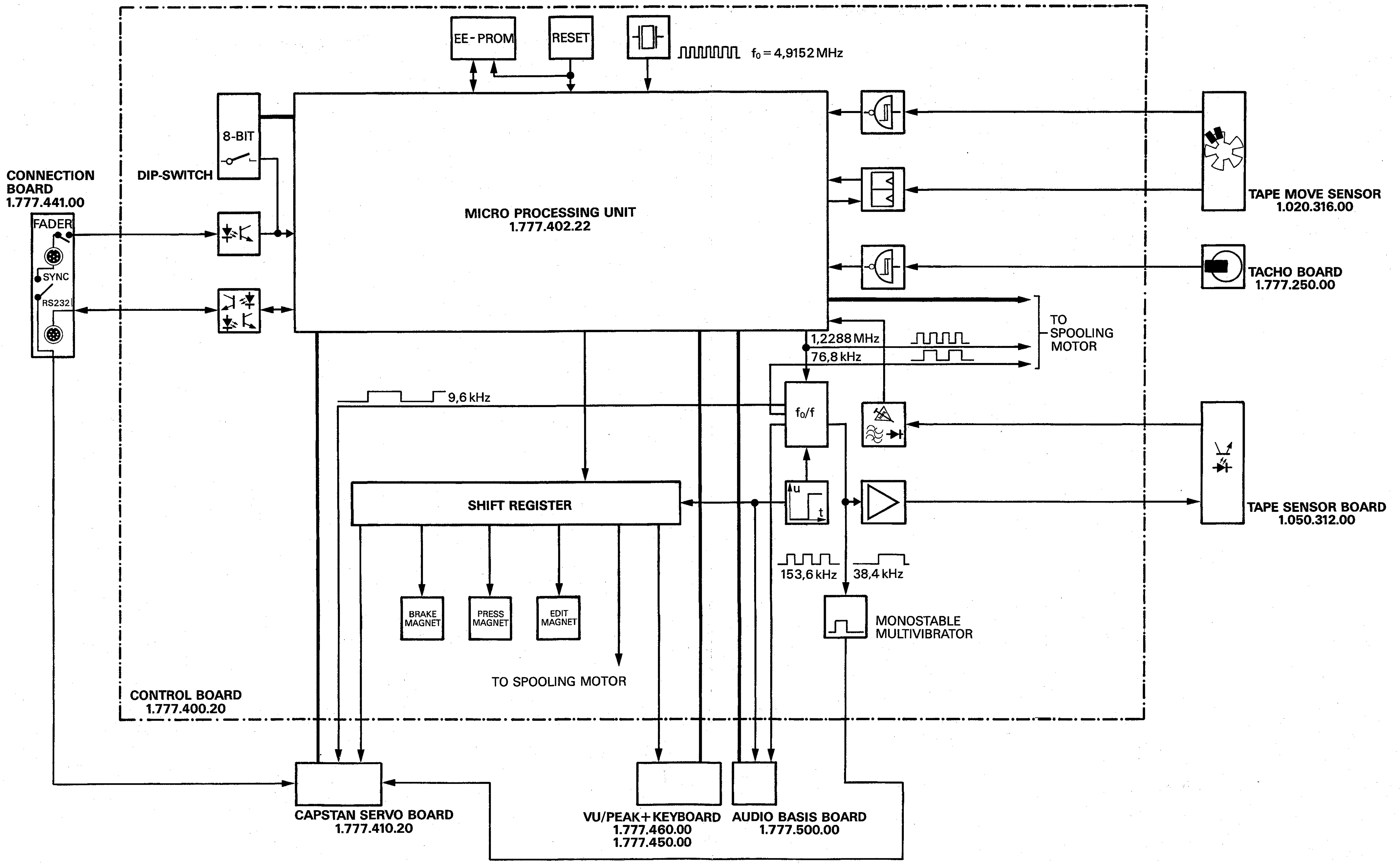
SPOOLING SERVO BLOCK DIAGRAM


LEFT MOTOR ON/OFF
FROM µP
VOLTAGE REFERENCE
D/A CONVERTER
FROM µP
8-BIT
SHIFT REGISTER
SERVO AMPLIFIER
MODULATOR
POWER STAGE
INSULATING TRANSFORMER
POWER FET
RECTIFIER
C
u
t
FROM µP
SWITCH MULTIPLEXER
76,8 kHz
FROM µP
MONOSTABLE MULTIVIBRATOR
CURRENT SOURCE
COMMUTATION
ASYNCHRONOUS MOTOR LEFT
ASYNCHRONOUS MOTOR RIGHT
MAINS SUPPLY
FILTER
VOLTAGE SELECTOR
DISTRIBUTOR BOARD 1.777.320.00
TRANSFORMATOR
MAINS TRANSFORMER 1.777.300.00
u
t
SERVO AMPLIFIER
MODULATOR
POWER STAGE
INSULATING TRANSFORMER
POWER FET
RECTIFIER
C
FROM µP 1,2288 MHz
DRIVE AMPLIFIER
RECTIFIER
TAPE TENSION SENSOR
MECANICAL ADJUST AMPLIFIER
TAPE TENSION ADJUST AMPLIFIER
REWIND FORWARD PLAY REDUCED REWIND
FROM SHIFT REGISTER
TENSION ARM BOARD 1.777.211.00
CONTROL BOARD 1.777.400.22
RECTIFIER
VOLTAGE REGULATOR
VOLTAGE SWITCHING REGULATOR
FROM µP 76,8 kHz
+15 V
−15 V
+40 V
+24 V
+5 V

PUBLISHED 01/88

CPU BLOCK DIAGRAM


EE-PROM
RESET
f₀ = 4,9152 MHz
8-BIT
DIP-SWITCH
CONNECTION BOARD 1.777.441.00
FADER
SYNC
RS232
MICRO PROCESSING UNIT 1.777.402.22
TAPE MOVE SENSOR 1.020.316.00
TACHO BOARD 1.777.250.00
TO SPOOLING MOTOR
1,2288 MHz
76,8 kHz
9,6 kHz
f₀/f
u
t
SHIFT REGISTER
TAPE SENSOR BOARD 1.050.312.00
153,6 kHz
38,4 kHz
BRAKE MAGNET
PRESS MAGNET
EDIT MAGNET
MONOSTABLE MULTIVIBRATOR
TO SPOOLING MOTOR
CONTROL BOARD 1.777.400.20
CAPSTAN SERVO BOARD 1.777.410.20
VU/PEAK+KEYBOARD 1.777.460.00 1.777.450.00
AUDIO BASIS BOARD 1.777.500.00

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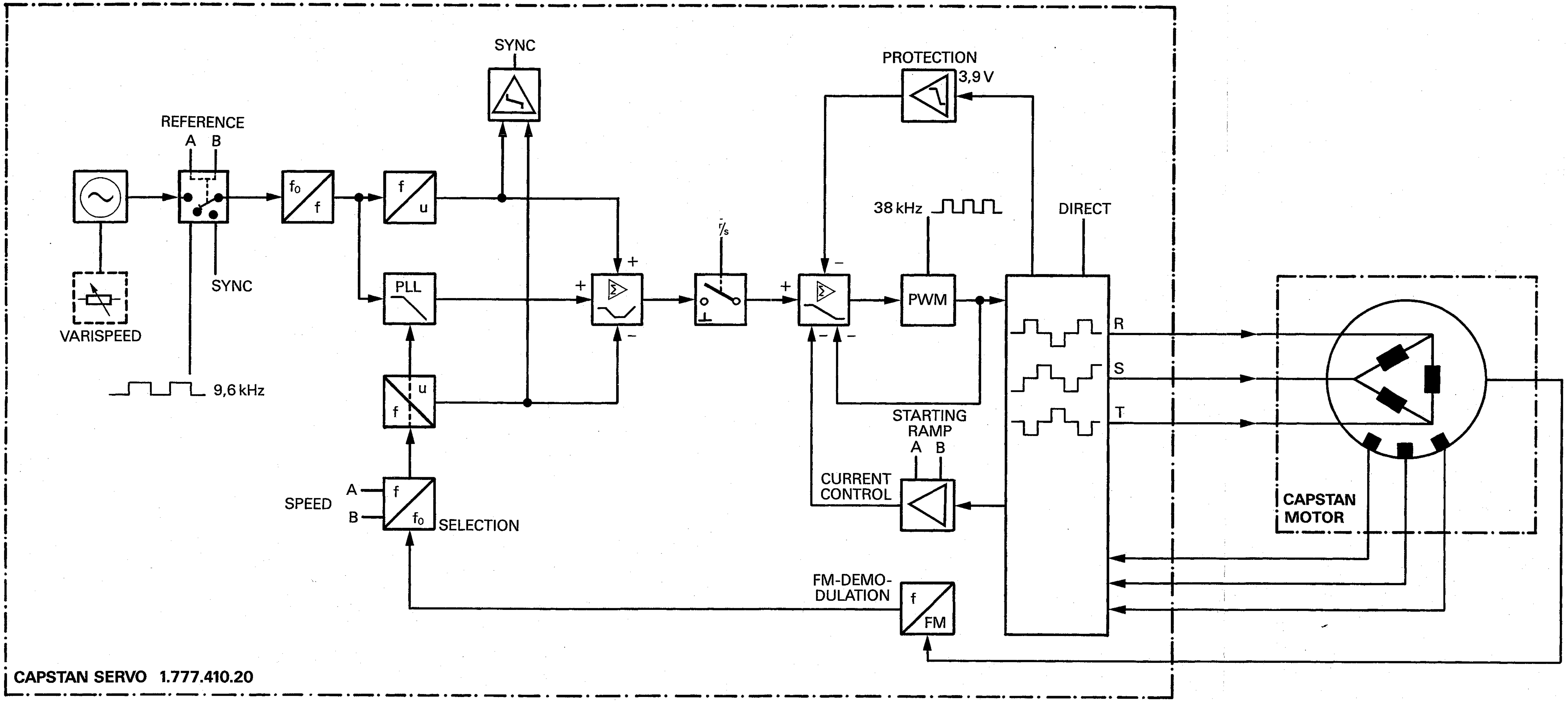
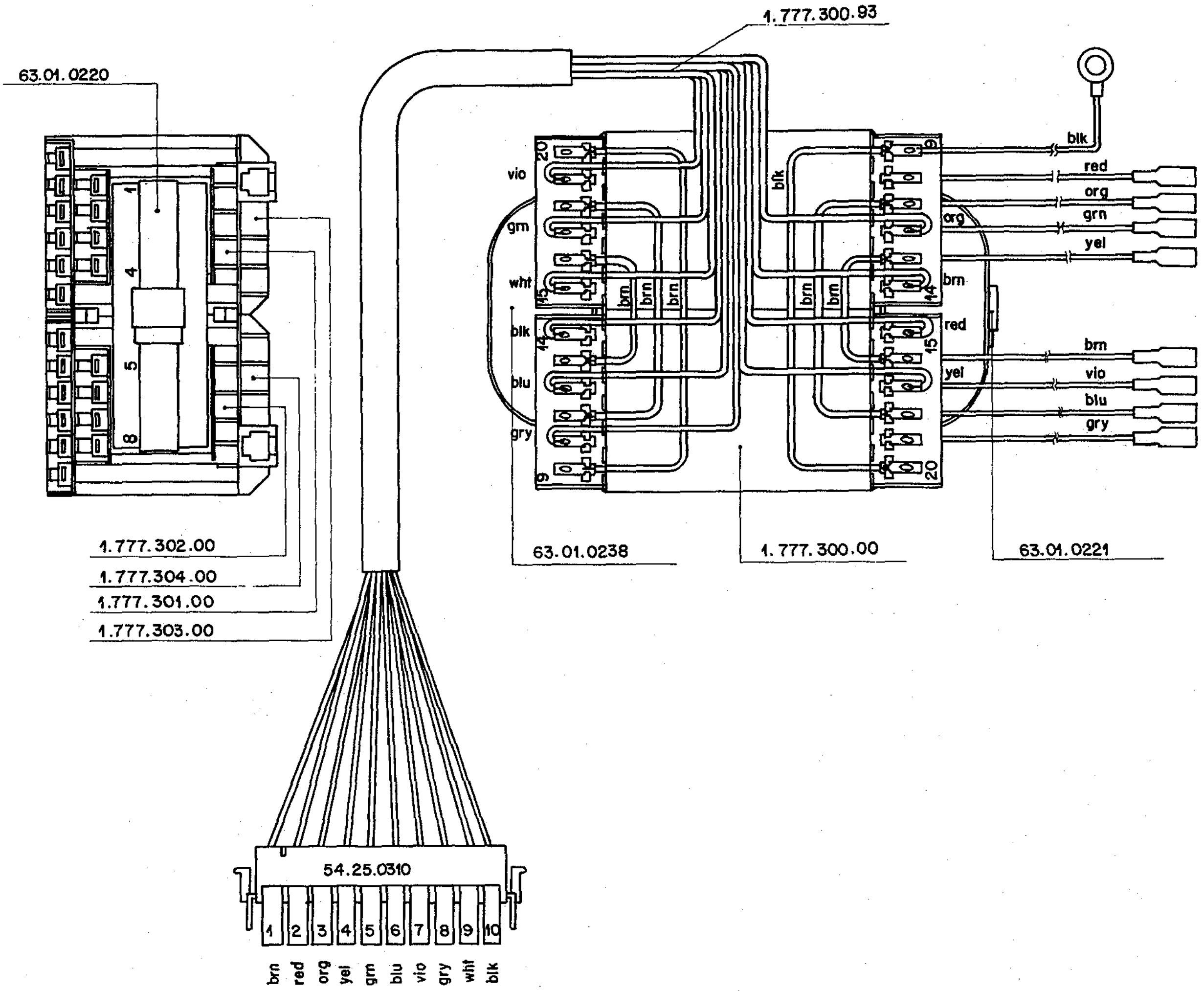
CAPSTAN SERVO DIAGRAM

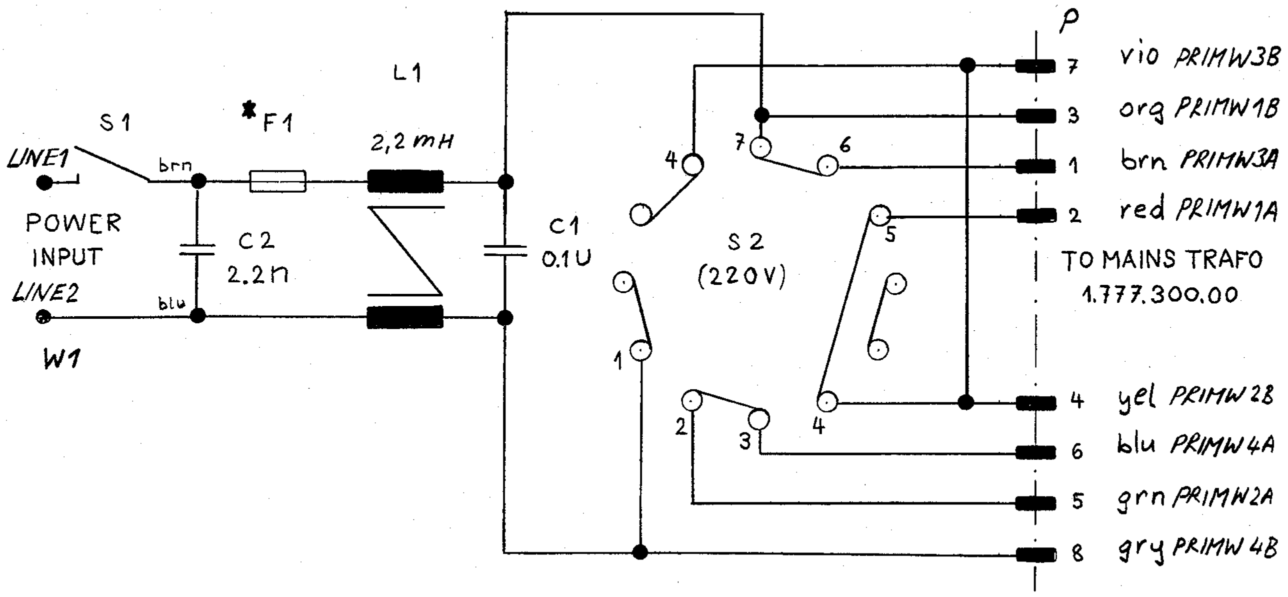

SYNC
REFERENCE
A B
PROTECTION
3,9 V
38 kHz
DIRECT
SYNC
VARISPEED
9,6 kHz
PLL
PWM
R
S
T
STARTING
RAMP
A B
CURRENT
CONTROL
SPEED
A
B
SELECTION
FM-DEMO-
DULATION
FM
CAPSTAN
MOTOR
CAPSTAN SERVO 1.777.410.20

PUBLISHED 01/88

MAINS TRANSFORMER 1.777.300.00


63.01.0220
1
4
5
8
1.777.302.00
1.777.304.00
1.777.301.00
1.777.303.00
1.777.300.93
vio
grn
wht
blk
blu
gry
20
15
14
9
brn
brn
brn
blk
brn
brn
org
brn
red
yel
blk
red
org
grn
yel
brn
vio
blu
gry
63.01.0238
1.777.300.00
63.01.0221
54.25.0310
1
2
3
4
5
6
7
8
9
10
brn
red
org
yel
grn
blu
vio
gry
wht
blk

DISTRIBUTOR BOARD 1.777.320.00

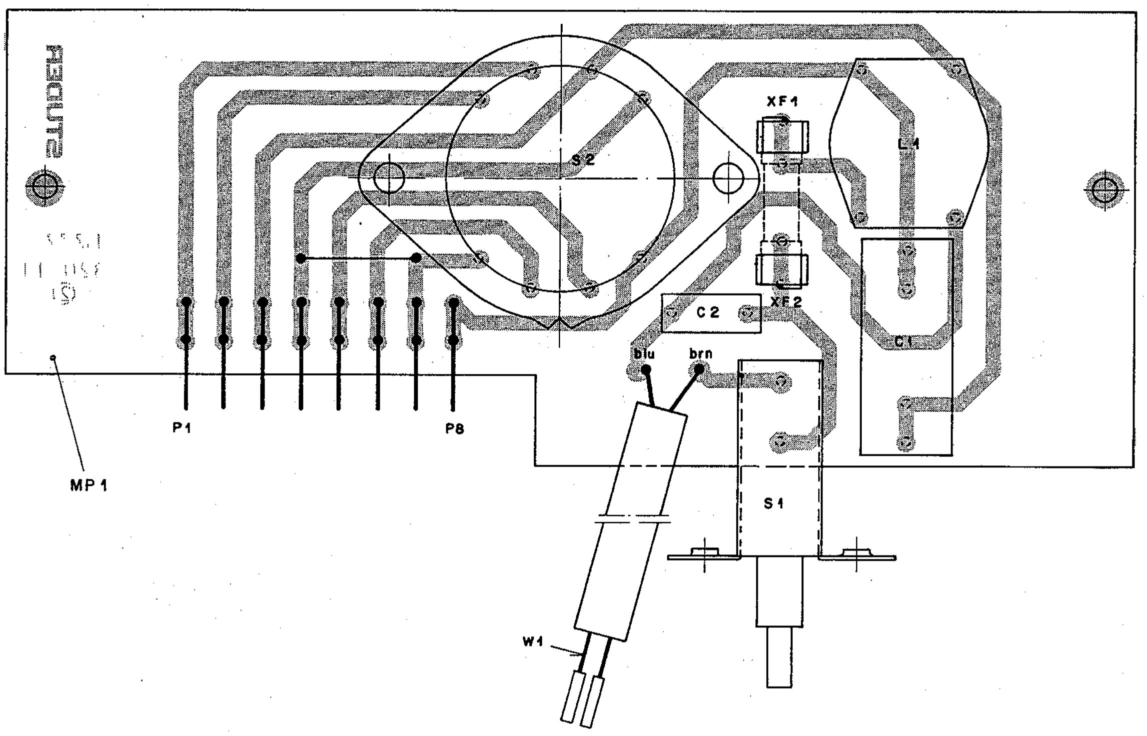

S1
LINE1
brn
POWER
INPUT
LINE2
blu
W1
*F1
C2
2.2n
L1
2,2 mH
C1
0.1U
S2
(220V)
4
7
6
5
1
2
3
4
P
7
3
1
2
4
6
5
8
vio PRIMW3B
org PRIMW1B
brn PRIMW3A
red PRIMW1A
TO MAINS TRAFO
1.777.300.00
yel PRIMW2B
blu PRIMW4A
grn PRIMW2A
gry PRIMW4B

*Power fuse (F1)
100...140V: T 2,5 A / 250V (slow)
200...240V: T 1,25A / 250V (slow)

⓪ 8 .1.87	○ . .	○ . .	○ . .	○ . .
	C270			PAGE 1 OF 1
STUDER	DISTRIBUTOR BOARD		SC	1.777.320.00

PUBLISHED 5/89

DISTRIBUTOR BOARD 1.777.320.00



INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.14.0104	.1 U	20%. 250V , IEC65	Ri
	C..0002	59.14.0222	2200 P	20%, 250V , IEC65	Ri
	L..0001	62.03.0100	2÷2.2mH	2 A, TOROIDAL CHOKE	Sie,Tokin
(00)	MP.0001	1.777.320.11		DISTRIBUTOR PCB	St
(01)	MP.0001	1.777.320.11		DISTRIBUTOR PCB -(1)	St
(02)	MP.0001	1.777.320.12		DISTRIBUTOR PCB -(1)	St
	P..0001	54.02.0328	2.8÷0.8	FLAT,ANGLE	St
	P..0002	54.02.0328	2.8÷0.8	FLAT,ANGLE	St
	P..0003	54.02.0328	2.8÷0.8	FLAT,ANGLE	St
	P..0004	54.02.0328	2.8÷0.8	FLAT,ANGLE	St
	P..0005	54.02.0328	2.8÷0.8	FLAT,ANGLE	St
	P..0006	54.02.0328	2.8÷0.8	FLAT,ANGLE	St
	P..0007	54.02.0328	2.8÷0.8	FLAT,ANGLE	St
	P..0008	54.02.0328	2.8÷0.8	FLAT,ANGLE	St
	S..0001	55.03.0286	- 240V	MAINS INTERUPTOR PRINTCONNEC.	Alps
	S..0002	53.03.0131	- 240V	VOLTAGE SELECTOR PRINT	Teckentrup
	XF.0001	53.03.0142	5 ÷ 20	LOCKING	St
	XF.0002	53.03.0142	5 ÷ 20	LOCKING	St
	W..0001	1.777.320.93		WL-DISTRIBUTOR BOARD	St

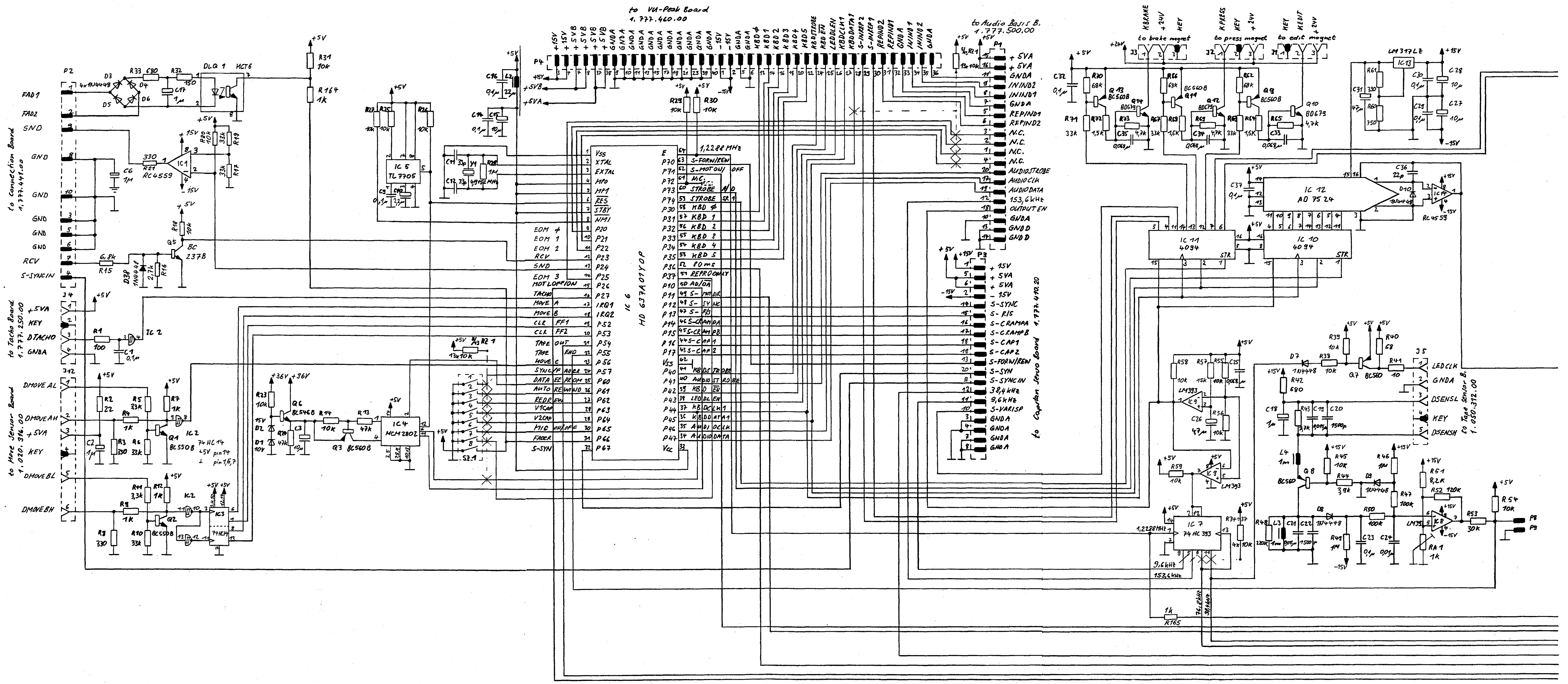
(01) 14.01.87 Value adjust
(02) 18.05.88 PCB revise

MANUFACTURER: Ri=Rifa,Alps=Alps&Co,Teckentrup=Teckentrup KG,St=Studer
Sie=Siemens.

ORIG 86/09/19 (01) 87/01/14 (02) 88/05/18

STUDER (02) 88/05/18 DISTRIBUTOR BOARD PL 1.777.320.00 PAGE 1

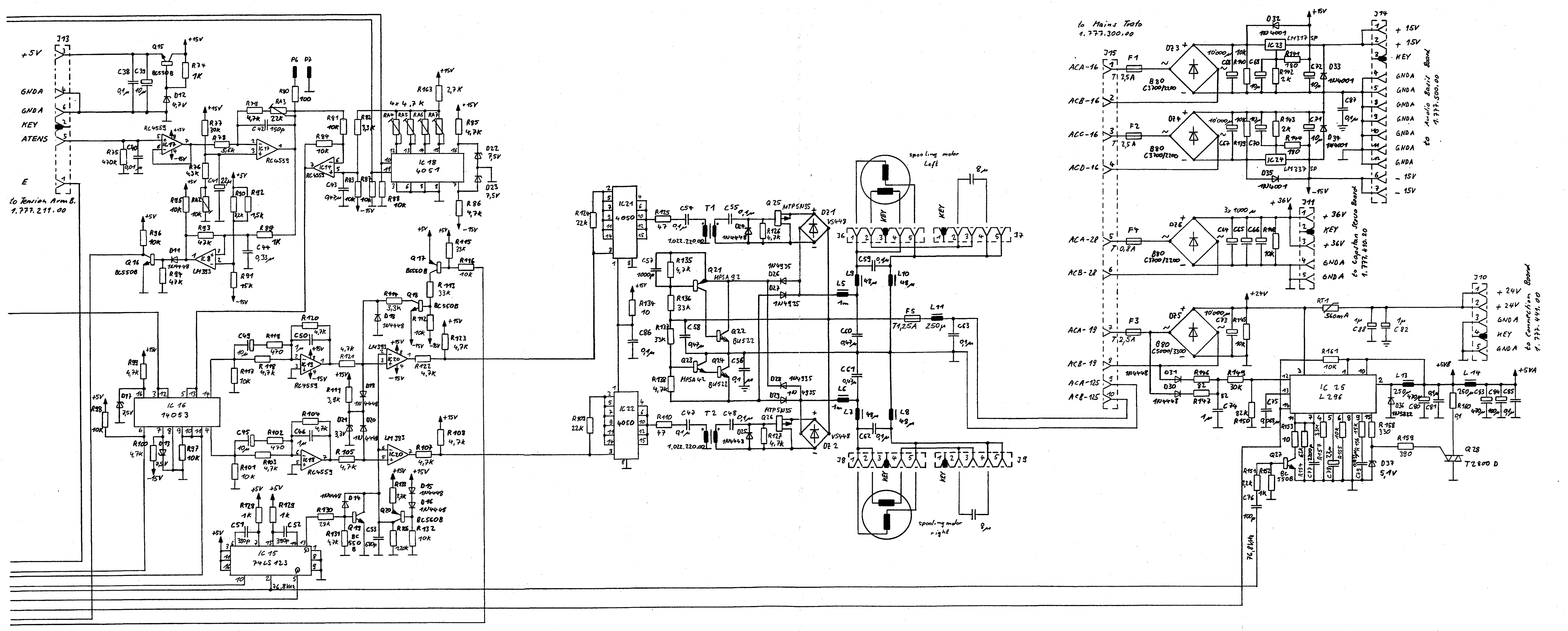
CONTROL BOARD 1.777.400.22


to VU-Peak Board 1.777.460.00
to Audio Basis B. 1.777.500.00
to Connection Board 1.777.441.00
to Tacho Board 1.777.250.00
to Move Sensor Board 1.020.316.00
to Capstan Sensor Board 1.777.410.20
to Tape Sensor B. 1.050.312.00
to brake magnet
to press magnet
to edit magnet
P1
P2
P3
P4
J4
J12
J5
IC 1 RC4559
IC 2 74HC14
IC 3 74HC14
IC 4 MCM2802
IC 5 TL7705
IC 6 HD 637A01Y0P
IC 7 74HC393
IC 8 LM393
IC 10 4094
IC 11 4094
IC 12 AD 7524
IC 13 LM317LZ
IC 14 RC4559
DLQ 1 MCT6
FAD1
FAD2
SND
GND
RCV
S-SYNCIN
+5VA
KEY
DTACHO
GNDA
DMOVE AL
DMOVE AH
DMOVE BL
DMOVE BH
LEDCLK
DSENSL
DSENSH
1,2288 MHz
S2.1

① 22.12.87	○	○	○	○
	C270			PAGE 3 OF 6
STUDER	CONTROL BOARD	"ESE"	SC	1.777.400.22

PUBLISHED 01/88

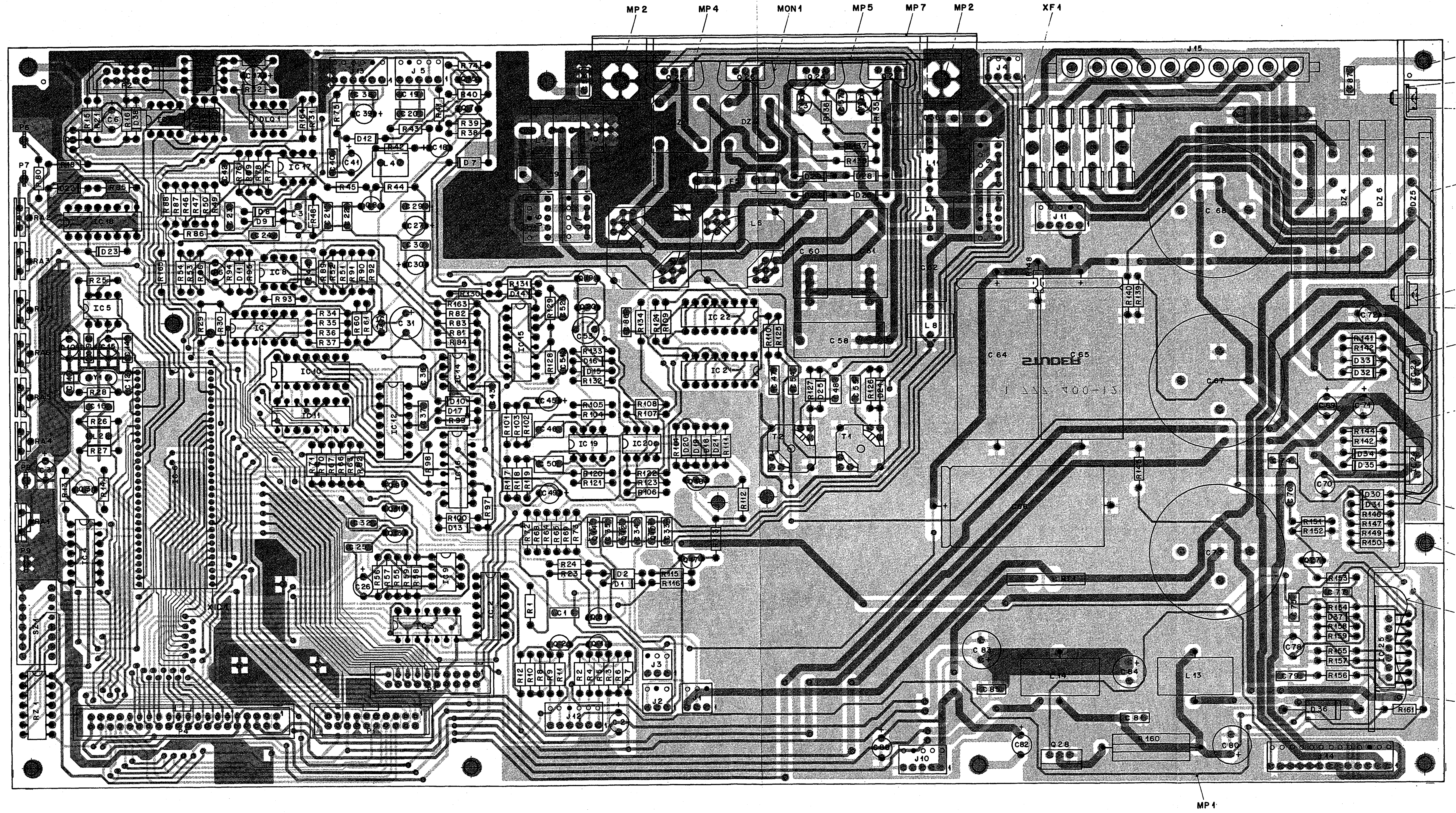
CONTROL BOARD 1.777.400.22


J13
+5V
GNDA
GNDA
KEY
ATENS
E
to Tension Arm B.
1.777.211.00
Q15
BC550B
D12
4,7V
R74
1K
C38
C39
IC17
RC4559
IC17
RC4559
R77
R78
R79
R80
R81
R82
R83
R84
R85
R86
R87
R88
P6
P7
R163
2,7K
4x 4,7K
RA4 RA5 RA6 RA7
IC18
4051
IC14
RC4559
D22
7,5V
D23
7,5V
Q16
BC550B
LM393
IC16
14053
IC15
74LS123
IC19
RC4559
IC20
LM393
Q17
BC550B
Q18
BC550B
Q19
Q20
BC550B
IC21
4050
IC22
4050
T1
T2
1.022.220.00
Q25
MTP5N35
Q26
MTP5N35
D21
VS448
D22
VS448
Q21
MPSA92
Q22
BU522
Q23
MPSA42
Q24
BU522
1N4935
1N4448
L5
L6
L7
L8
L9
L10
L11
250µ
F5
T1,25A
J6
J7
J8
J9
KEY
spooling motor left
spooling motor right
to Mains Trafo
1.777.300.00
J15
ACA-16
ACB-16
ACC-16
ACD-16
ACA-28
ACB-28
ACA-19
ACB-19
ACA-125
ACB-125
F1
T2,5A
F2
T2,5A
F3
T2,5A
F4
T0,8A
B80
C3700/2200
B80
C5000/3300
D32
1N4001
IC23
LM317 SP
IC24
LM337 SP
D33
1N4001
D34
1N4001
D35
1N4001
+15V
-15V
J14
+15V
+15V
KEY
GNDA
GNDA
GNDA
GNDA
GNDA
GNDA
GNDA
-15V
-15V
to Audio Basis Board
1.777.500.00
+36V
J11
+36V
KEY
+36V
GNDA
GNDA
to Capstan Servo Board
1.777.410.80
+24V
RT1
560mA
J10
+24V
+24V
GNDA
KEY
GNDA
to Connection Board
1.777.441.00
IC25
L296
L13
L14
+5V8
+5VA
Q27
BC550B
Q28
T2800 D
D37
5,1V
R158
330
R159
380
76,8kHz
76,8kHz

⓪ 22.12.87	○ . .	○ . .	○ . .	○ . .
	C 270			PAGE 6 OF 6
STUDER	CONTROL BOARD		SC	1.777. 400. 22

PUBLISHED 01/88

CONTROL BOARD 1.777.400.22


MP2
MP4
MON1
MP5
MP7
MP2
XF1
J15
MP2
MP8
MP2
MON3
MP2
MP8
MON1
MP3
MP6
MP2
MON2
MP9
MP1
STUDER

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CONTROL BOARD 1.777.400.22

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.06.0104	.1 U	10%, 63V , PETP	
	C..0002	59.22.8109	1 U	-20%, 63V , EL	
	C..0003	59.22.6100	10 U	-20%, 35V , EL	
	C..0006	59.22.8109	1 U	-20%, 50V , EL	
	C..0009	59.06.5104	.1 U	5%, 63V , PETP	
	C..0010	59.22.8229	2.2 U	-20%, 63V , EL	
	C..0011	59.34.2330	33 P	5%, N150 , CER	
	C..0012	59.34.2330	33 P	5%, N150 , CER	
	C..0014	59.06.0104	.1 U	10%, 63V , PETP	
	C..0015	59.22.6100	10 U	-20%, 35V , EL	
	C..0016	59.06.0104	.1 U	10%, 63V , PETP	
	C..0017	59.22.8109	1 U	-20%, 63V , EL	
	C..0018	59.22.8109	1 U	-20%, 63V , EL	
	C..0019	59.06.5153	.015 U	5%, 63V , PETP	
	C..0020	59.06.5152	1500 P	5%, 63V , PETP	
	C..0021	59.06.5153	.015 U	5%, 63V , PETP	
	C..0022	59.06.5152	1500 P	5%, 63V , PETP	
	C..0023	59.06.0104	.1 U	10%, 63V , PETP	
	C..0024	59.06.0103	.01 U	10%, 63V , PETP	
	C..0025	59.06.0683	.068 U	10%, 63V , PETP	
	C..0026	59.22.8479	4.7 U	-20%, 63V , EL	
	C..0027	59.22.6100	10 U	-20%, 35V , EL	
	C..0028	59.22.6100	10 U	-20%, 35V , EL	
	C..0029	59.06.0104	.1 U	10%, 63V , PETP	
	C..0030	59.06.0104	.1 U	10%, 63V , PETP	
	C..0031	59.22.4470	47 U	-20%, 16V , EL	
	C..0032	59.06.0104	.1 U	10%, 63V , PETP	
	C..0033	59.06.0683	.068 U	10%, 63V , PETP	
	C..0034	59.06.0683	.068 U	10%, 63V , PETP	
	C..0035	59.06.0683	.068 U	10%, 63V , PETP	
	C..0036	59.34.2220	22 P	5%, N150 , CER	
	C..0037	59.06.0104	.1 U	10%, 63V , PETP	
	C..0038	59.06.0104	.1 U	10%, 63V , PETP	
	C..0039	59.22.6100	10 U	-20%, 35V , EL	
	C..0040	59.06.0103	.01 U	10%, 63V , PETP	
	C..0041	59.22.5220	22 U	-20%, 25V , EL	
	C..0042	59.34.4151	150 P	5%, N750 , CER	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0043	59.06.0474	.47 U	10%, 63V , PETP	
	C..0044	59.06.0334	.33 U	10%, 63V , PETP	
	C..0045	59.22.6100	10 U	-20%, 35V , EL	
	C..0046	59.06.5105	1.0 U	5%, 50V , PETP	
	C..0047	59.06.0104	.1 U	10%, 63V , PETP	
	C..0048	59.06.0104	.1 U	10%, 63V , PETP	
	C..0049	59.22.6100	10 U	-20%, 35V , EL	
	C..0050	59.06.5105	1.0 U	5%, 50V , PETP	
	C..0051	59.34.5391	390 P	5%,N1500 , CER	
	C..0052	59.34.5391	390 P	5%,N1500 , CER	
	C..0053	59.05.2681	680 P	2.5%, 630V , PP	
	C..0054	59.06.0104	.1 U	10%, 63V , PETP	
	C..0055	59.06.0104	.1 U	10%, 63V , PETP	
	C..0056	59.06.0104	.1 U	10%, 63V , PETP	
	C..0057	59.32.4102	1000 P	20%, 50V , CER	
(00)	C..0058	59.06.5104	.1 U	5%, 63V , PETP	
	C..0058	59.99.0450	.47 U	10%, 150V , MP	
	C..0059	59.05.6104	.1 U	10%, 400V , MPP	
	C..0060	59.99.0450	.47 U	10%, 150V , MP	
	C..0061	59.99.0450	.47 U	10%, 150V , MP	
	C..0062	59.05.6104	.1 U	10%, 400V , MPP	
	C..0063	59.05.6104	.1 U	10%, 400V , MPP	
	C..0064	59.25.6102	1000 U	-20%, 63V , EL	
	C..0065	59.25.6102	1000 U	-20%, 63V , EL	
	C..0066	59.25.6102	1000 U	-20%, 63V , EL	
	C..0067	59.35.4103	10000 U	-20%, 40V , EL	
	C..0068	59.35.4103	10000 U	-20%, 40V , EL	
	C..0069	59.22.6100	10 U	-20%, 35V , EL	
	C..0070	59.22.6100	10 U	-20%, 35V , EL	
	C..0071	59.22.6100	10 U	-20%, 35V , EL	
	C..0072	59.22.6100	10 U	-20%, 35V , EL	
	C..0073	59.35.4103	10000 U	-20%, 40V , EL	
	C..0074	59.06.5105	1.0 U	5%, 50V , PETP	
	C..0075	59.06.0683	.068 U	10%, 63V , PETP	
	C..0076	59.34.4101	100 P	5%, N750 , CER	
	C..0077	59.06.5222	2200 P	5%, 63V , PETP	
	C..0078	59.22.8229	2.2 U	-20%, 63V , EL	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0079	59.06.5333	.033 U	5%, 63V , PETP	
	C..0080	59.22.4471	470 U	-20%, 16V , EL	
	C..0081	59.06.0104	.1 U	10%, 63V , PETP	
	C..0082	59.22.8109	1 U	-20%, 50V , EL	
	C..0083	59.22.4471	470 U	-20%, 16V , EL	
	C..0084	59.22.5101	100 U	-20%, 25V , EL	
	C..0085	59.06.0104	.1 U	10%, 63V , PETP	
	C..0086	59.06.0104	.1 U	10%, 63V , PETP	
	C..0087	59.06.0104	.1 U	10%, 63V , PETP	
	C..0088	59.22.8109	1 U	-20%, 50V , EL	
	D..0001	50.04.1114	10 V	5%, .40W , Z	
	D..0002	50.04.1119	15 V	5%, .40W , Z	
	D..0003	50.04.0125		1N 4448 , SI	
	D..0004	50.04.0125		1N 4448 , SI	
	D..0005	50.04.0125		1N 4448 , SI	
	D..0006	50.04.0125		1N 4448 , SI	
	D..0007	50.04.0125		1N 4448 , SI	
	D..0008	50.04.0125		1N 4448 , SI	
	D..0009	50.04.0125		1N 4448 , SI	
	D..0010	50.04.0125		1N 4448 , SI	
	D..0011	50.04.0125		1N 4448 , SI	
	D..0012	50.04.1123	4.7 V	5%, .40W , Z	
	D..0013	50.04.1103	7.5 V	5%, .40W , Z	
	D..0014	50.04.0125		1N 4448 , SI	
	D..0015	50.04.0125		1N 4448 , SI	
	D..0016	50.04.0125		1N 4448 , SI	
	D..0017	50.04.1103	7.5 V	5%, .40W , Z	
	D..0018	50.04.0125		1N 4448 , SI	
	D..0019	50.04.0125		1N 4448 , SI	
	D..0020	50.04.0125		1N 4448 , SI	
	D..0021	50.04.1107	3.3 V	5%, .40W , Z	
	D..0022	50.04.1103	7.5 V	5%, .40W , Z	
	D..0023	50.04.1103	7.5 V	5%, .40W , Z	
	D..0024	50.04.0125		1N 4448 , SI	
	D..0025	50.04.0125		1N 4448 , SI	
	D..0026	50.04.0508		1N 4935 , BYW 100-200	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	D..0027	50.04.0508		1N 4935 , BYW 100-200	
	D..0028	50.04.0508		1N 4935 , BYW 100-200	
	D..0029	50.04.0508		1N 4935 , BYW 100-200	
	D..0030	50.04.0125		1N 4448 , SI	
	D..0031	50.04.0125		1N 4448 , SI	
	D..0032	50.04.0122		1N 4001 , SI	
	D..0033	50.04.0122		1N 4001 , SI	
	D..0034	50.04.0122		1N 4001 , SI	
	D..0035	50.04.0122		1N 4001 , SI	
	D..0036	50.04.0519		1N 5822 , SI	
	D..0037	50.04.1112	5.1 V	5%, .40W , Z	
	D..0038	50.04.0125		1N 4448 , SI	
	DLQ0001	50.99.0111		ILD-74 , MCT 6	GI
	DZ.0001	70.01.0226	280V/2A	VS 448 , SI	
	DZ.0002	70.01.0226	280V/2A	VS 448 , SI	
	DZ.0003	70.01.0235		B 80 C 3700/2200 , SI	
	DZ.0004	70.01.0235		B 80 C 3700/2200 , SI	
	DZ.0005	70.01.0236		B 80 C 5000/3300 , SI	
	DZ.0006	70.01.0235		B 80 C 3700/2200 , SI	
	F..0001	51.01.0121	5 * 20	T2.5 /250V	
	F..0002	51.01.0121	5 * 20	T2.5 /250V	
	F..0003	51.01.0121	5 * 20	T2.5 /250V	
	F..0004	51.01.0116	5 * 20	T0.8 /250V	
	F..0005	51.01.0118	5 * 20	T1.25/250V	
	IC.0001	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0002	50.17.1014		74 HC 14 ,A	Ph,Mot
	IC.0003	50.17.1074		74 HC 74 ,A	Ph,Mot
	IC.0004	50.14.0126		MCM 2802 P ,A	Mot
	IC.0005	50.11.0122		TL 7705 ACP	TI
	IC.0006	1.777.402.23		CONTROL OPROM ,A	St
	IC.0007	50.17.1393		74 HC 393 ,A	Ph,Mot
	IC.0008	50.05.0283		LM 393 , TDP 0193 DP	TI,NS
	IC.0009	50.05.0283		LM 393 , TDP 0193 DP	TI,NS

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	IC.0010	50.07.0018		MC 14094 BCP, HEF 4094BP,A	Mot,RCA
	IC.0011	50.07.0018		MC 14094 BCP, HEF 4094BP,A	Mot,RCA
	IC.0012	50.07.0002		AD 7524 JN ,A	ADI,MPS
	IC.0013	50.10.0108		LM 317 LZ	NS,Mot
	IC.0014	50.09.0107		RC 4559 NB, UPC 4559,	Ra,NEC
	IC.0015	50.06.0123		SN 74 LS 123 N TTL	TI,Mot
	IC.0016	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot
	IC.0017	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0018	50.07.0051		CD 4051 BE, MC 14051 BCP,A	Mot
	IC.0019	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0020	50.05.0283		LM 393 , TDP 0193 DP	TI,NS
	IC.0021	50.07.0050		4050 BPC , MC14 050 BCP ,A	Mot
	IC.0022	50.07.0050		4050 BPC , MC14 050 BCP ,A	Mot
	IC.0023	50.10.0104		LM 317 SP , TDB 0017 SP	NS,Mot
	IC.0024	50.10.0105		LM 337 SP , TDB 0137-SP	NS,Mot
	IC.0025	50.10.0110		L 296	SGS
	J..0001	54.01.0287	3 POL.	STRIP CIS PIN UP	AMP
	J..0002	54.01.0287	3 POL.	STRIP CIS PIN UP	AMP
	J..0003	54.01.0287	3 POL.	STRIP CIS PIN UP	AMP
	J..0004	54.01.0241	4 POL.	STRIP CIS PIN UP	AMP
	J..0005	54.01.0288	5 POL.	STRIP CIS PIN UP	AMP
	J..0006	54.01.0288	5 POL.	STRIP CIS PIN UP	AMP
	J..0007	54.01.0288	5 POL.	STRIP CIS PIN UP	AMP
	J..0008	54.01.0288	5 POL.	STRIP CIS PIN UP	AMP
	J..0009	54.01.0288	5 POL.	STRIP CIS PIN UP	AMP
	J..0010	54.01.0288	5 POL.	STRIP CIS PIN UP	AMP
	J..0011	54.01.0288	5 POL.	STRIP CIS PIN UP	AMP
	J..0012	54.01.0216	6 POL.	STRIP CIS PIN UP	AMP
	J..0013	54.01.0216	6 POL.	STRIP CIS PIN UP	AMP
	J..0014	54.01.0215	12 POL.	STRIP CIS PIN UP	AMP
	J..0015	54.25.0010	10 POL.	BUSH , 12 A	AMP
	L..0002	62.02.3220	22 U	10%, COIL	
	L..0003	62.02.3102	1 M	10%, COIL	
	L..0004	62.02.3102	1 M	10%, COIL	
	L..0005	1.022.219.00	1 M	COIL	St

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	L..0006	1.022.219.00	1 M	COIL	St
	L..0007	62.03.0010	48 U	2 A , COIL	
	L..0008	62.03.0010	48 U	2 A , COIL	
	L..0009	62.03.0010	48 U	2 A , COIL	
	L..0010	62.03.0010	48 U	2 A , COIL	
	L..0011	62.03.0025	250 U	2 A , COIL	
	L..0013	62.03.0025	250 U	2 A , COIL	
	L..0014	62.03.0025	250 U	2 A , COIL	
	MON0001	50.20.2003	6 pcs	CLAMP TO (TO 220)	
	MON0002	50.20.2005		CLAMP TO (SOT 93)	
	MON0003	70.01.0238		CLAMP	
	MP.0001	1.777.400.12		CONTROL PCB	St
	MP.0002	21.38.0353	6 pcs	SCREW , M 3 * 5	
	MP.0003	1.777.400.01		COLD-SHEET	St
	MP.0004	1.777.400.02		COLD-SHEET	St
	MP.0005	1.777.400.03		ISOLATION	St
	MP.0006	1.777.400.04		ISOLATION	St
	MP.0007	1.777.118.00		SCREEN-SHEET-METAL	St
	MP.0008	24.16.1030	2 pcs	WASHER	
	MP.0009	50.20.0316		ISOLATION	St
	P..0001	54.14.2002	16 POL.	PLUG , STRAIGHT	By
	P..0002	54.14.2001	10 POL.	PLUG , STRAIGHT	By
	P..0003	54.14.2008	20 POL.	PLUG , STRAIGHT	Yi
	P..0004	54.14.2004	40 POL.	PLUG , STRAIGHT	By
	P..0006	54.02.0320	2.8*0.8	FLAT , STRAIGHT	Lo
	P..0007	54.02.0320	2.8*0.8	FLAT , STRAIGHT	Lo
	P..0008	54.02.0320	2.8*0.8	FLAT , STRAIGHT	Lo
	P..0009	54.02.0320	2.8*0.8	FLAT , STRAIGHT	Lo
	Q..0001	50.03.0436		BC 550 B ,A	Sie
	Q..0002	50.03.0436		BC 550 B ,A	Sie
	Q..0003	50.03.0515		BC 560 B ,A	Sie
	Q..0005	50.03.0436		BC 550 B ,A	Sie
	Q..0006	50.03.0491		BC 546 B	ITT

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	Q..0007	50.03.0496		BC 560 ,A	Sie
	Q..0008	50.03.0496		BC 560 ,A	Sie
	Q..0009	50.03.0515		BC 560 B ,A	Sie
	Q..0010	50.03.0504		BD 679 , MJE 802	Ph
	Q..0011	50.03.0515		BC 560 B ,A	Sie
	Q..0012	50.03.0504		BD 679 , MJE 802	Ph
	Q..0013	50.03.0515		BC 560 B ,A	Sie
	Q..0014	50.03.0504		BD 679 , MJE 802	Ph
	Q..0015	50.03.0436		BC 550 B ,A	Sie
	Q..0016	50.03.0436		BC 550 B ,A	Sie
	Q..0017	50.03.0515		BC 560 B ,A	Sie
	Q..0018	50.03.0436		BC 550 B ,A	Sie
	Q..0019	50.03.0436		BC 550 B ,A	Sie
	Q..0020	50.03.0515		BC 560 B ,A	Sie
	Q..0021	50.03.0485		MPS A 92	Mot
	Q..0022	50.03.0520		BU 522	Mot
	Q..0023	50.03.0484		MPS A 42	Fc,Mot
	Q..0024	50.03.0520		BU 522	Mot
	Q..0025	50.03.0519		MTP 5N35 , IRF 733 ,A	IR,Mot
	Q..0026	50.03.0519		MTP 5N35 , IRF 733 ,A	IR,Mot
	Q..0027	50.03.0436		BC 550 B ,A	Sie
	Q..0028	50.99.0106	400 V	T 2800 D , 8A , TRIAC	Ph,RCA
	R..0001	57.11.4101	100	2%, 0207 , MF	
	R..0002	57.11.4220	22	2%, 0207 , MF	
	R..0003	57.11.4331	330	2%, 0207 , MF	
	R..0004	57.11.4102	1 K	2%, 0207 , MF	
	R..0005	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0006	57.11.4333	33 K	2%, 0207 , MF	
	R..0007	57.11.4102	1 K	2%, 0207 , MF	
	R..0008	57.11.4331	330	2%, 0207 , MF	
	R..0009	57.11.4102	1 K	2%, 0207 , MF	
	R..0010	57.11.4333	33 K	2%, 0207 , MF	
	R..0011	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0012	57.11.4102	1 K	2%, 0207 , MF	
	R..0013	57.11.4473	47 K	2%, 0207 , MF	
	R..0014	57.11.4103	10 K	2%, 0207 , MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0015	57.11.4682	6.8 K	2%, 0207 , MF	
	R..0016	57.11.4272	2.7 K	2%, 0207 , MF	
	R..0017	57.11.4333	33 K	2%, 0207 , MF	
	R..0018	57.11.4103	10 K	2%, 0207 , MF	
	R..0019	57.11.4333	33 K	2%, 0207 , MF	
	R..0020	57.11.4103	10 K	2%, 0207 , MF	
	R..0021	57.11.4331	330	2%, 0207 , MF	
	R..0023	57.11.4103	10 K	2%, 0207 , MF	
	R..0024	57.11.4473	47 K	2%, 0207 , MF	
	R..0025	57.11.4103	10 K	2%, 0207 , MF	
	R..0026	57.11.4103	10 K	2%, 0207 , MF	
	R..0027	57.11.4103	10 K	2%, 0207 , MF	
	R..0028	57.11.4105	1 M	5%, 0207 , MF	
	R..0029	57.11.4103	10 K	2%, 0207 , MF	
	R..0030	57.11.4103	10 K	2%, 0207 , MF	
	R..0031	57.11.4103	10 K	2%, 0207 , MF	
	R..0032	57.11.4151	150	2%, 0207 , MF	
	R..0033	57.11.4681	680	2%, 0207 , MF	
	R..0034	57.11.4103	10 K	2%, 0207 , MF	
	R..0035	57.11.4103	10 K	2%, 0207 , MF	
	R..0036	57.11.4103	10 K	2%, 0207 , MF	
	R..0037	57.11.4103	10 K	2%, 0207 , MF	
	R..0038	57.11.4103	10 K	2%, 0207 , MF	
	R..0039	57.11.4103	10 K	2%, 0207 , MF	
	R..0040	57.11.4680	68	2%, 0207 , MF	
	R..0041	57.11.4100	10	2%, 0207 , MF	
	R..0042	57.11.4681	680	2%, 0207 , MF	
	R..0043	57.11.4272	2.7 K	2%, 0207 , MF	
	R..0044	57.11.4392	3.9 K	2%, 0207 , MF	
	R..0045	57.11.4103	10 K	2%, 0207 , MF	
	R..0046	57.11.4105	1 M	5%, 0207 , MF	
	R..0047	57.11.4104	100 K	2%, 0207 , MF	
	R..0048	57.11.4224	220 K	2%, 0207 , MF	
	R..0049	57.11.4105	1 M	5%, 0207 , MF	
	R..0050	57.11.4104	100 K	2%, 0207 , MF	
	R..0051	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0052	57.11.4124	120 K	2%, 0207 , MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0053	57.11.3303	30 K	1%, 0207 MF	
	R..0054	57.11.4103	10 K	2%, 0207 , MF	
	R..0055	57.11.4103	10 K	2%, 0207 , MF	
	R..0056	57.11.4103	10 K	2%, 0207 , MF	
	R..0057	57.11.4153	15 K	2%, 0207 , MF	
	R..0058	57.11.4103	10 K	2%, 0207 , MF	
	R..0059	57.11.4103	10 K	2%, 0207 , MF	
	R..0060	57.11.3751	750	1%, 0207 , MF	
	R..0061	57.11.4331	330	2%, 0207 , MF	
	R..0062	57.11.4683	68 K	2%, 0207 , MF	
	R..0063	57.11.4333	33 K	2%, 0207 , MF	
	R..0064	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0065	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0066	57.11.4683	68 K	2%, 0207 , MF	
	R..0067	57.11.4333	33 K	2%, 0207 , MF	
	R..0068	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0069	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0070	57.11.4683	68 K	2%, 0207 , MF	
	R..0071	57.11.4333	33 K	2%, 0207 , MF	
	R..0072	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0073	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0074	57.11.4102	1 K	2%, 0207 , MF	
	R..0075	57.11.4474	470 K	2%, 0207 , MF	
	R..0076	57.11.3432	4.3 K	1%, 0207 , MF	
	R..0077	57.11.3303	30 K	1%, 0207 MF	
	R..0078	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0079	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0080	57.11.4101	100	2%, 0207 , MF	
	R..0081	57.11.4103	10 K	2%, 0207 , MF	
	R..0082	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0083	57.11.4103	10 K	2%, 0207 , MF	
	R..0084	57.11.4103	10 K	2%, 0207 , MF	
	R..0085	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0086	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0087	57.11.4103	10 K	2%, 0207 , MF	
	R..0088	57.11.4103	10 K	2%, 0207 , MF	
	R..0089	57.11.4102	1 K	2%, 0207 , MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0090	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0091	57.11.4153	15 K	2%, 0207 , MF	
	R..0092	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0093	57.11.4473	47 K	2%, 0207 , MF	
	R..0094	57.11.4473	47 K	2%, 0207 , MF	
	R..0095	57.11.4103	10 K	2%, 0207 , MF	
	R..0096	57.11.4103	10 K	2%, 0207 , MF	
	R..0097	57.11.4103	10 K	2%, 0207 , MF	
	R..0098	57.11.4103	10 K	2%, 0207 , MF	
	R..0099	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0100	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0101	57.11.4103	10 K	2%, 0207 , MF	
	R..0102	57.11.4471	470	2%, 0207 , MF	
	R..0103	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0104	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0105	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0106	57.11.4224	220 K	2%, 0207 , MF	
	R..0107	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0108	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0109	57.11.4223	22 K	2%, 0207 , MF	
	R..0110	57.11.4470	47	2%, 0207 , MF	
	R..0111	57.11.4392	3.9 K	2%, 0207 , MF	
	R..0112	57.11.4103	10 K	2%, 0207 , MF	
	R..0113	57.11.4333	33 K	2%, 0207 , MF	
	R..0114	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0115	57.11.4333	33 K	2%, 0207 , MF	
	R..0116	57.11.4103	10 K	2%, 0207 , MF	
	R..0117	57.11.4103	10 K	2%, 0207 , MF	
	R..0118	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0119	57.11.4471	470	2%, 0207 , MF	
	R..0120	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0121	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0122	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0123	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0124	57.11.4223	22 K	2%, 0207 , MF	
	R..0125	57.11.4470	47	2%, 0207 , MF	
	R..0126	57.11.4472	4.7 K	2%, 0207 , MF	

STUDER (00) 87/12/22 CONTROL BOARD A 1.777.400.22 PAGE 10

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0127	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0128	57.11.4102	1 K	2%, 0207 , MF	
	R..0129	57.11.4102	1 K	2%, 0207 , MF	
	R..0130	57.11.4182	1.8 K	2%, 0207 , MF	
	R..0131	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0132	57.11.4103	10 K	2%, 0207 , MF	
	R..0133	57.11.4272	2.7 K	2%, 0207 , MF	
	R..0134	57.11.4100	10	2%, 0207 , MF	
	R..0135	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0136	57.11.4333	33 K	2%, 0207 , MF	
	R..0137	57.11.4333	33 K	2%, 0207 , MF	
	R..0138	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0139	57.11.4103	10 K	2%, 0207 , MF	
	R..0140	57.11.4103	10 K	2%, 0207 , MF	
	R..0141	57.11.4181	180	2%, 0207 , MF	
	R..0142	57.11.3202	2 K	1%, 0207 , MF	
	R..0143	57.11.3202	2 K	1%, 0207 , MF	
	R..0144	57.11.4181	180	2%, 0207 , MF	
	R..0145	57.11.4103	10 K	2%, 0207 , MF	
	R..0146	57.11.4820	82	2%, 0207 , MF	
	R..0147	57.11.4820	82	2%, 0207 , MF	
	R..0148	57.11.4103	10 K	2%, 0207 , MF	
	R..0149	57.11.3303	30 K	2%, 0207 , MF	
	R..0150	57.11.4823	82 K	2%, 0207 , MF	
	R..0151	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0152	57.11.4102	1 K	2%, 0207 , MF	
	R..0153	57.11.4100	10	2%, 0207 , MF	
	R..0154	57.11.3622	6.2 K	1%, 0207 , MF	
	R..0155	57.11.4103	10 K	2%, 0207 , MF	
	R..0156	57.11.4153	15 K	2%, 0207 , MF	
	R..0157	57.11.5335	3.3 M	5%, 0207 , MF	
	R..0158	57.11.4331	330	2%, 0207 , MF	
	R..0159	57.11.4391	390	2%, 0207 , MF	
	R..0160	57.56.5108	0.1	10%, 4 W , WW	
	R..0161	57.11.4103	10 K	2%, 0207 , MF	
	R..0163	57.11.4272	2,7 K	2%, 0207 , MF	
	R..0164	57.11.4102	1 K	2%, 0207 , MF	

STUDER (00) 87/12/22 CONTROL BOARD A 1.777.400.22 PAGE 11

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0165	57.11.4102	1 K	2%, 0207 , MF	
	RA.0001	58.02.4102	1 K	20%, .1 W , PCSCH	
	RA.0002	58.02.4103	10 K	20%, .1 W , PCSCH	
	RA.0003	58.02.4223	22 K	20%, .1 W , PCSCH	
	RA.0004	58.02.4472	4.7 K	20%, .1 W , PCSCH	
	RA.0005	58.02.4472	4.7 K	20%, .1 W , PCSCH	
	RA.0006	58.02.4472	4.7 K	20%, .1 W , PCSCH	
	RA.0007	58.02.4472	4.7 K	20%, .1 W , PCSCH	
	RT.0001	57.92.1561	560 MA	56V, PTC	
	RZ.0001	57.83.3103		2%, 13 * 10 K , DIL14	
	SZ.0001	55.01.0168	8*A	SWITCH-ARRAY DIL	AMP
	T..0001	1.022.220.00		TRANSFORMER	St
	T..0002	1.022.220.00		TRANSFORMER	St
	XF.0001	53.03.0142	10 pcs	FUSE-CLAMP , 5 * 20	De
	XIC0001	53.03.0364	64 POL.	IC-SOCKET,DIL,LOET,R=1.78MM	Yi
	Y..0001	89.01.0560		4.9152 MHZ	QAG,ITT

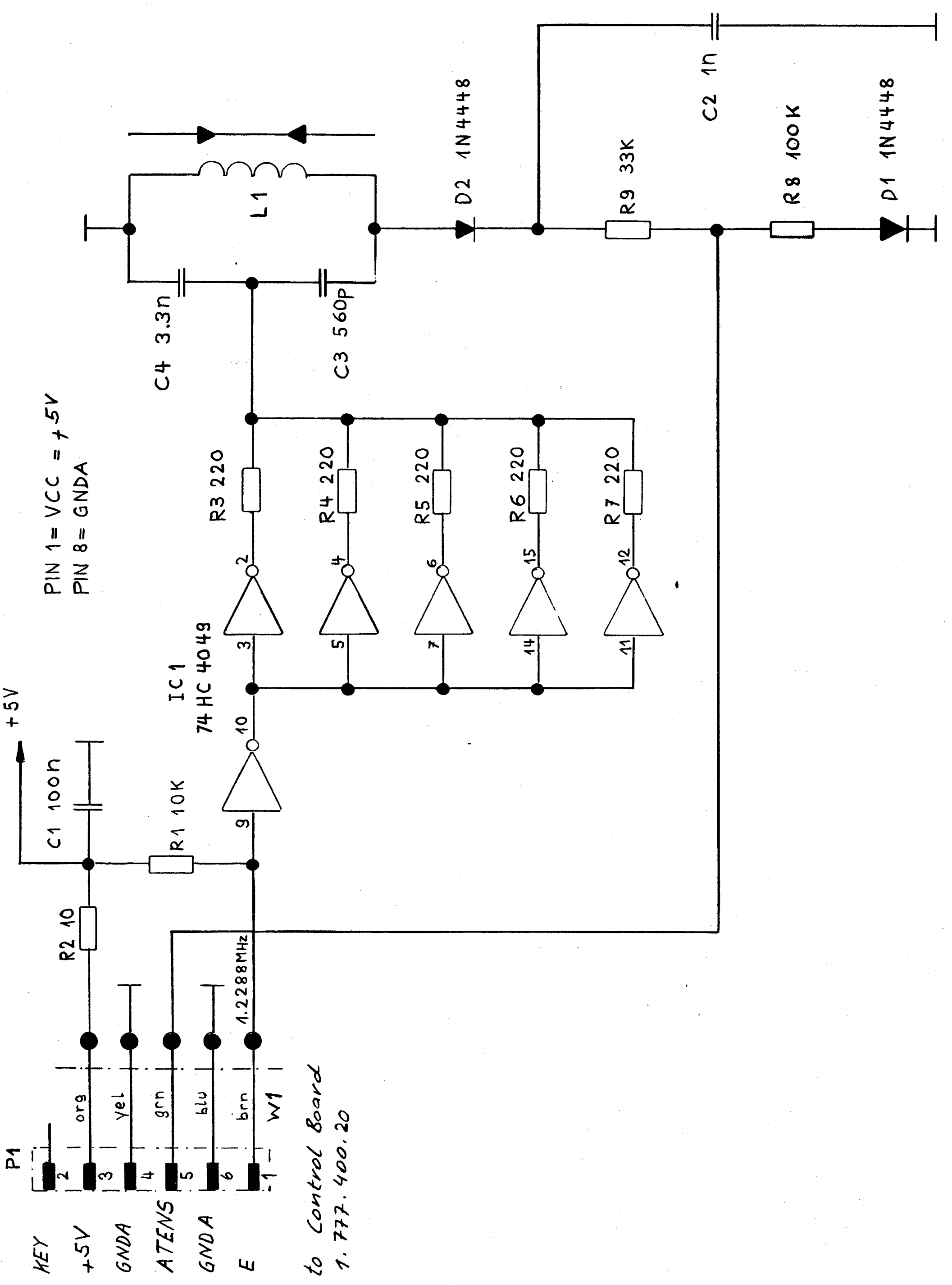
MANUFACTURER: AMP=AMP Incorporated, ADI=Analog Devices Inc., Bg=Berg, By=Burndy, De=Defra, Fc=Fairchild, GI=General Instruments, IR=International Rectifier, ITT=Intermetall, Lo=Loupot, Mot=Motorola, MPS=Micro Power Systems, St=Studer, NEC=Nippon Electric Corp., NS=National Semiconductors, Ph=Philips, QAG=Quarz AG, Ra=Raytheon, SGS=SGS/Ates, RCA=Radio Corporation of America, Sie=Siemens, TI=Texas Instruments, Yi=Yamaichi.

ORIG 87/12/22

STUDER (00) 87/12/22 CONTROL BOARD A 1.777.400.22 PAGE 12

PUBLISHED 5/89

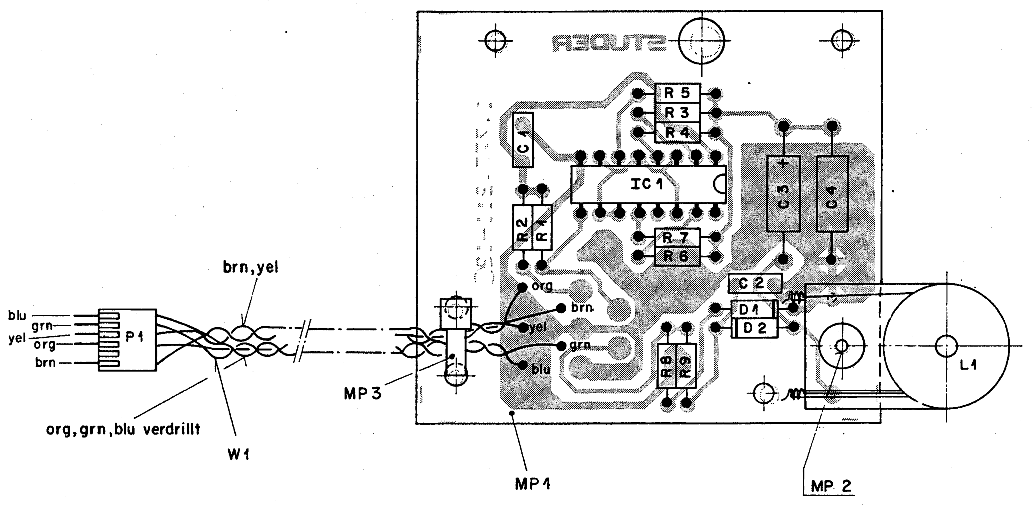
TENSION ARM BOARD 1.777.211.00


C2 1n
D2 1N4448
R9 33K
R8 100K
D1 1N4448
L1
C4 3.3n
C3 560p
PIN 1 = VCC = +5V
PIN 8 = GNDA
R3 220
R4 220
R5 220
R6 220
R7 220
2
4
6
15
12
3
5
7
14
11
IC1
74HC4049
10
9
+5V
C1 100n
R1 10K
R2 10
4.2288MHz
org
yel
grn
blu
brn
W1
P1
2
3
4
5
6
1
KEY
+5V
GNDA
ATENS
GNDA
E
to Control Board
1.777.400.20

⓪ 8.1.87	① 12.8.87 J.M Epl	○ . .	○ . .	○ . .
	C270			PAGE 1 OF 1
STUDER	TENSION ARM BOARD "ESE"		SC	1.777.211.00

PUBLISHED 01/88

TENSION ARM BOARD 1.777.211.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.06.0104	.1 U	10%, 63V , PETP	
	C..0002	59.06.0102	1000 P	10%, 63V , PETP	
(00)	C..0003	59.12.7471	470 P	1%, 63V , PS	
(01)	C..0003	59.12.7561	560 P	1%, 63V , PS	
	C..0004	59.12.7332	3300 P	1%, 63V , PS	
	D..0001	50.04.0125		1N 4448 , SI	ITT,Ph,Ses,TI
	D..0002	50.04.0125		1N 4448 , SI	ITT,Ph,Ses,TI
	IC.0001	50.17.4049		MC 74HC 4049N	TI,Mot,NS
	L..0001	1.777.212.00		COIL	St
(00)	MP.0001	1.777.211.11		TENSION ARM PCB	St
(01)	MP.0001	1.777.211.11		TENSION ARM PCB -(1)	St
(02)	MP.0001	1.777.211.12		TENSION ARM PCB	St
	MP.0002	28.21.2410	D 3*8	TUBULAR RIVET, DIN	St
	MP.0003	35.03.0109		CLAMPING BELT	Burndy,Panduit
	P..0001	54.01.0230	6 POL.	CASING CIS	AMP
	R..0001	57.11.4103	10 K	2%, 0207 , MF	
	R..0002	57.11.4100	10	2%, 0207 , MF	
	R..0003	57.11.4221	220	2%, 0207 , MF	
	R..0004	57.11.4221	220	2%, 0207 , MF	
	R..0005	57.11.4221	220	2%, 0207 , MF	
	R..0006	57.11.4221	220	2%, 0207 , MF	
	R..0007	57.11.4221	220	2%, 0207 , MF	
	R..0008	57.11.4104	100 K	2%, 0207 , MF	
	R..0009	57.11.4333	33 K	2%, 0207 , MF	
	W..0001	1.777.211.93		WL-TENSION ARM BOARD	St

S T U D E R (02) 87/11/15 TENSION ARM BOARD A 1.777.211.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.

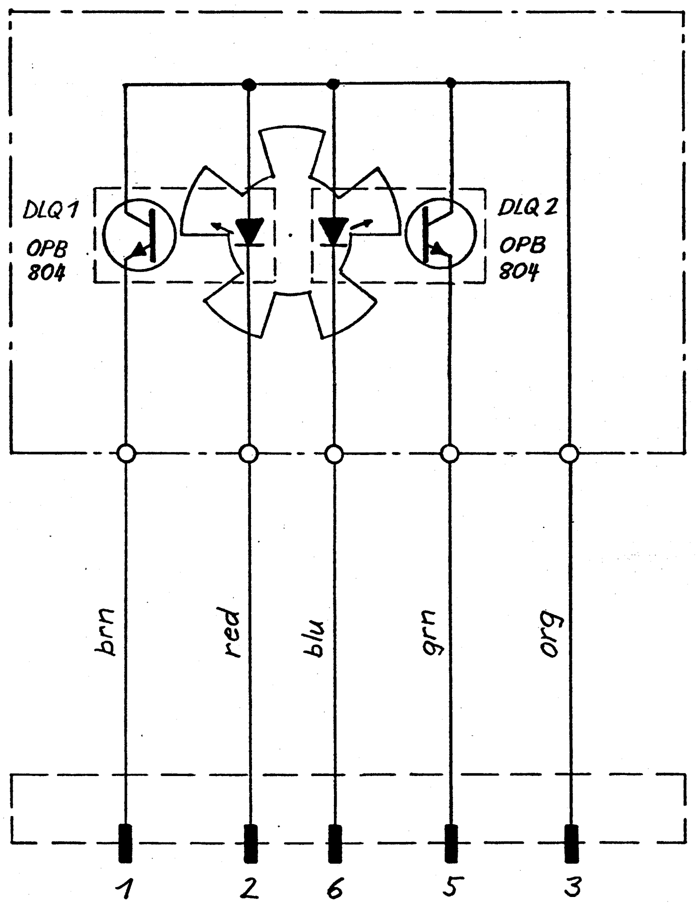
(01) 12.08.87 Value adjust
(02) 15.11.87 PCB Revise

MANUFACTURER: Mot=Motorola, NS=National Semiconductors, Ph=Philips
ST=Studer,TI=Texas Instruments,AMP=AMP Incorporated
ITT=Intermetall, Ses=Sescosem,

ORIG 86/09/19 (01) 87/08/12 (02) 87/11/15

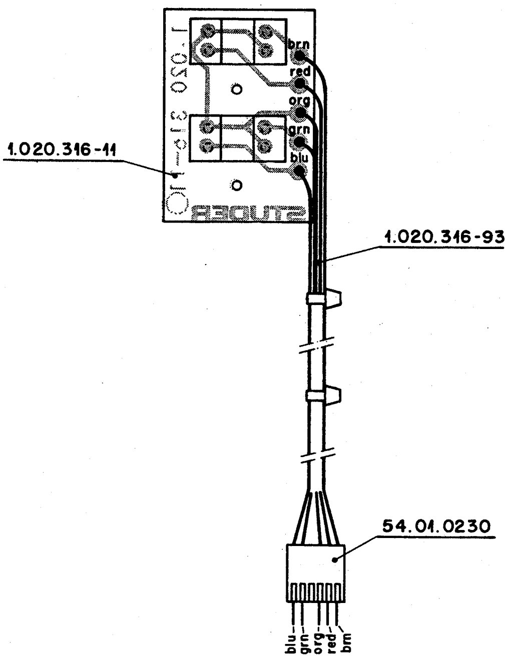
S T U D E R (02) 87/11/15 TENSION ARM BOARD A 1.777.211.00 PAGE 2

TAPE MOVE SENSOR PCB 1.020.316.00


DLQ 1
OPB
804
DLQ 2
OPB
804
brn
red
blu
grn
org
1
2
6
5
3

⓪ 10.7.85 Rec	○ . .	○ . .	○ . .	○ . .
	PR 99 MK II			PAGE 1 OF 1
STUDER	TAPE MOVE SENSOR PCB			1.020.316-00

TAPE MOVE SENSOR PCB 1.020.316.00


1.020.316-11
brn
red
org
grn
blu
1.020.316-93
54.01.0230
blu
grn
org
red
brn

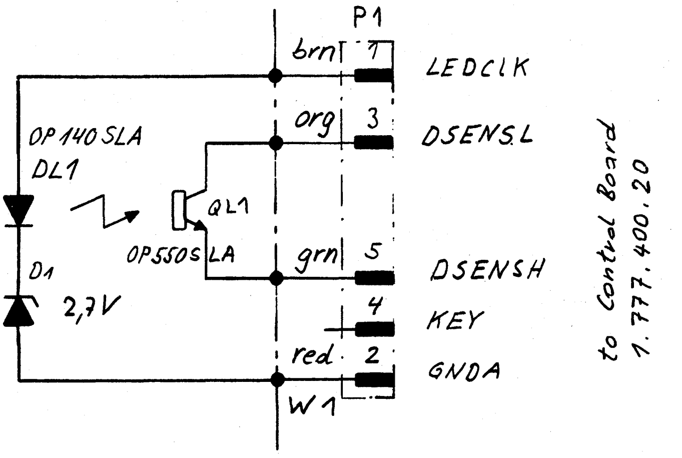
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	DLQ...1	50.04.2128	OPB 804	Slotted Optical Switch	Op
	DLQ...2	50.04.2128	OPB 804	Slotted Optical Switch	Op

MANUFACTURER: Op = Optron

ORIG 85/07/10

S T U D E R (00) 85/07/10 Rec TAPE MOVE SENSOR PCB 1.020.316.00 PAGE 1

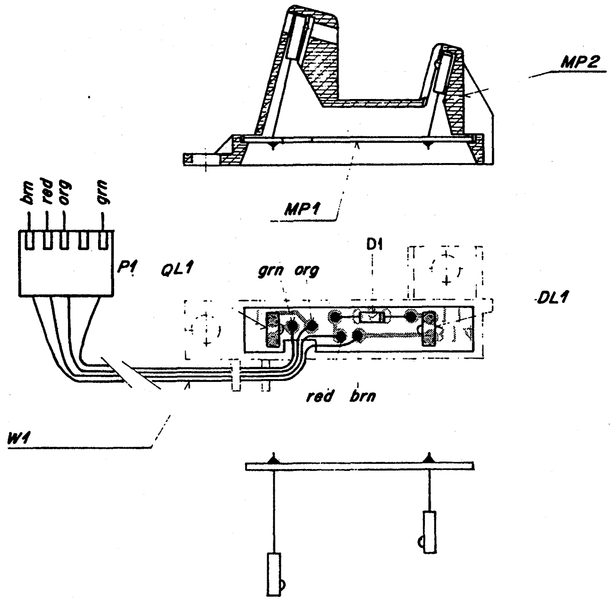
TAPE SENSOR BOARD 1.050.312.00


P1
brn
1
LEDCLK
org
3
DSENS.L
OP140SLA
DL1
QL1
OP550SLA
grn
5
DSENSH
D1
2,7V
4
KEY
red
2
GNDA
W1
to Control Board
1.777.400.20

⓪ 3.2.87	○ . .	○ . .	○ . .	○ . .	
	C270			PAGE 1 OF 1	
STUDER	TAPE SENSOR BOARD		SC	1.050.312.00	

PUBLISHED 01/88

TAPE SENSOR BOARD 1.050.312.00



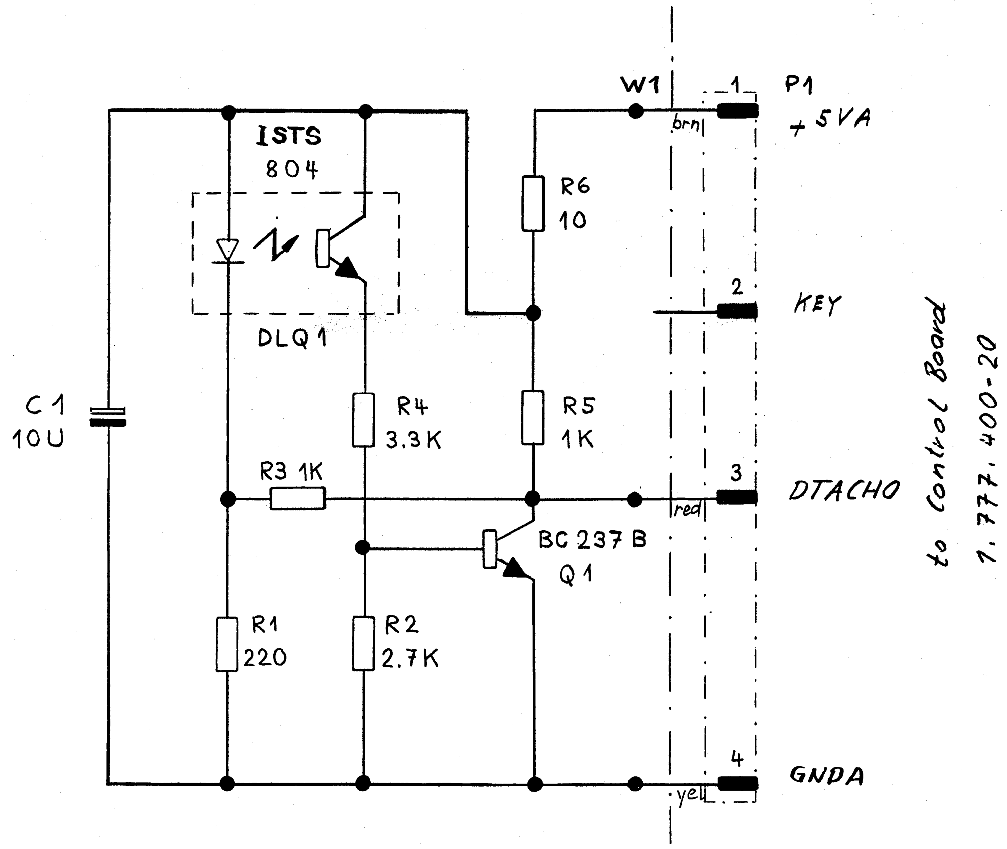
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	D..0001	50.04.1106	2.7 V	2,5 %,.4W,Z	Ph,Mot,ITT
	DL.0001	50.04.2126		OP 140 SLA	OP
	MP.0001	1.050.314.11		TAPE SENSOR PCB	St
	MP.0002	1.050.312.01		CASE	St
	P..0001	54.01.0264	5POL.	CASING	AMP
	QL.0001	50.04.2127		OP 550 SLA	OP
	W..0001	1.050.312.93		WL-TAPE SENSOR	St

MANUFACTURER: Mot=Motorola,OP=Optron,ITT=Intermetall,Ph=Philips
St=Studer.

ORIG 86/09/19

STUDER (00) 86/09/19 TAPE SENSOR BOARD 1.050.312.00 PAGE 1

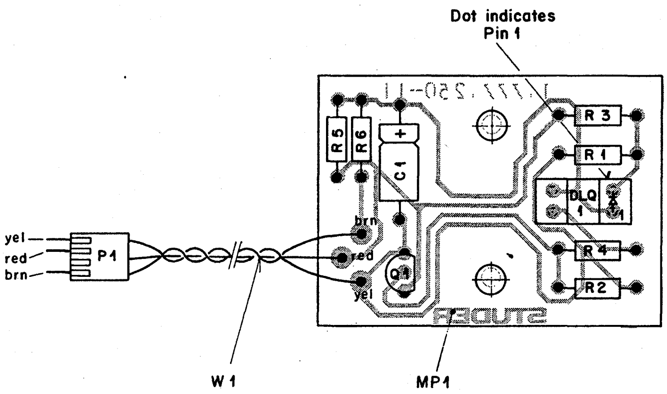
TACHO BOARD 1.777.250.00


W1
1
P1
+5VA
brn
ISTS
804
R6
10
DLQ1
2
KEY
C1
10U
R4
3.3K
R5
1K
R3 1K
3
DTACHO
red
BC 237 B
Q1
R1
220
R2
2.7K
4
GNDA
yel
to Control Board
1.777.400-20

⓪ 8.1.87	○ . .	○ . .	○ . .	○ . .
	C 270			PAGE 1 OF 1
STUDER	TACHO BOARD		SC	1.777.250.00

PUBLISHED 01/88

TACHO BOARD 1.777.250.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	C..0001	59.22.6100	10 U	-20%, 40V, EL	
(01)	C..0001	59.25.4100	10 U	-20%, 25V, EL	
(00)	DLQ0001	50.04.2128		ISTS 804	Op,GI,Isocom
(01)	DLQ0001	50.04.3001		ISTS 804	Op,GI,Isocom
	MP.0001	1.777.250.11		TACHO-PCB	St
	P..0001	54.01.0280	4 POL.	CASING CIS	AMP
	Q..0001	50.03.0436		BC 237 B ,A	ITT,TI,Ph,Mot
	R..0001	57.11.4221	220	2%, 0207 , MF	
	R..0002	57.11.4272	2.7 K	2%, 0207 , MF	
	R..0003	57.11.4102	1 K	2%, 0207 , MF	
	R..0004	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0005	57.11.4102	1 K	2%, 0207 , MF	
	R..0006	57.11.4100	10	2%, 0207 , MF	
	W..0001	1.777.250.93		WL-TACHO BOARD	St

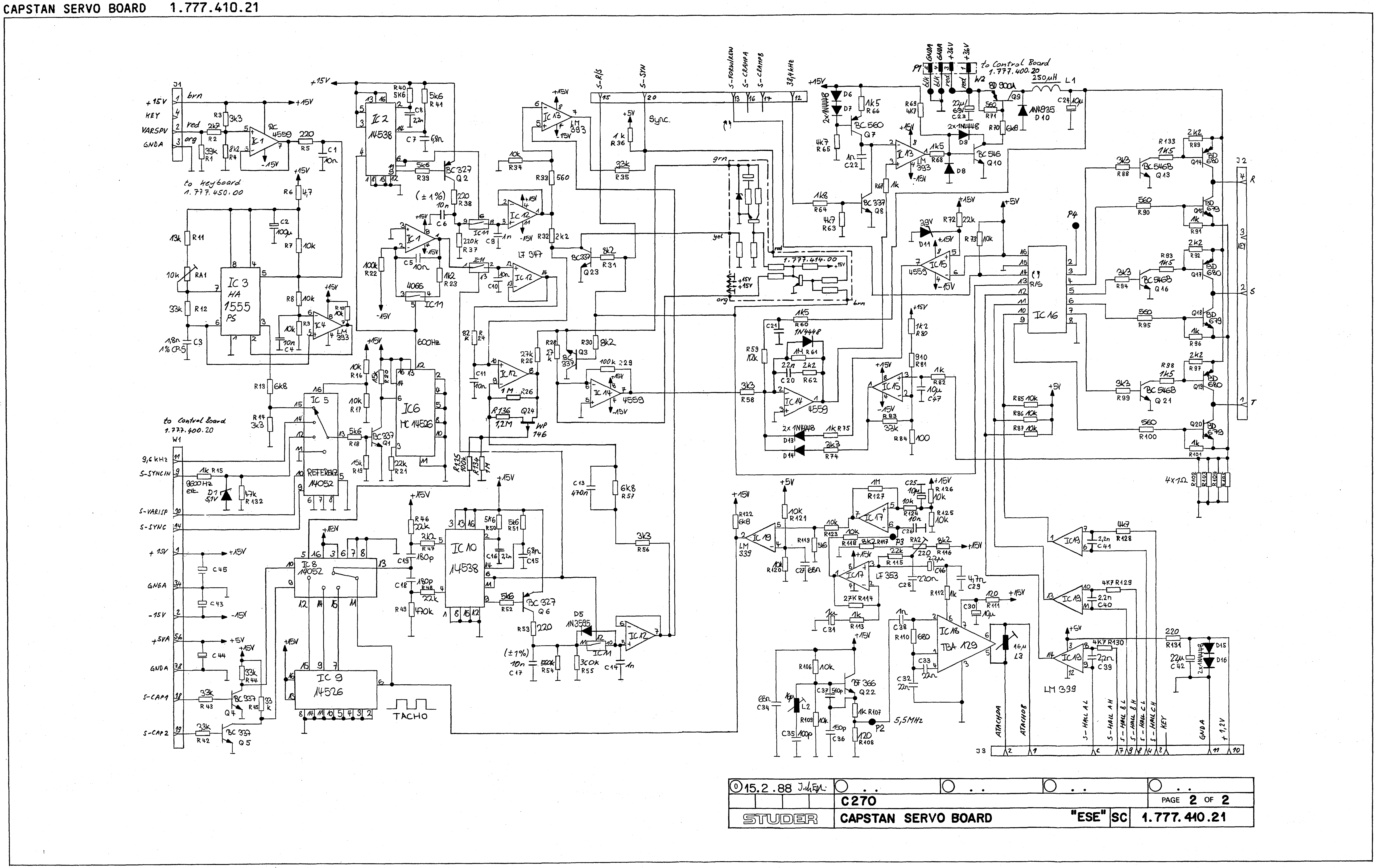
(01) 12.08.87 PARTNUMBER CHANGE

MANUFACTURER: Mot=Motorola,ITT=Intermetall,Ph=Philips,Op=Optron,
St=Studer,Ti=Texas Instruments,GI=General Instruments,
AMP=AMP Incorporated.

ORIG 86/09/19 (01) 87/08/12

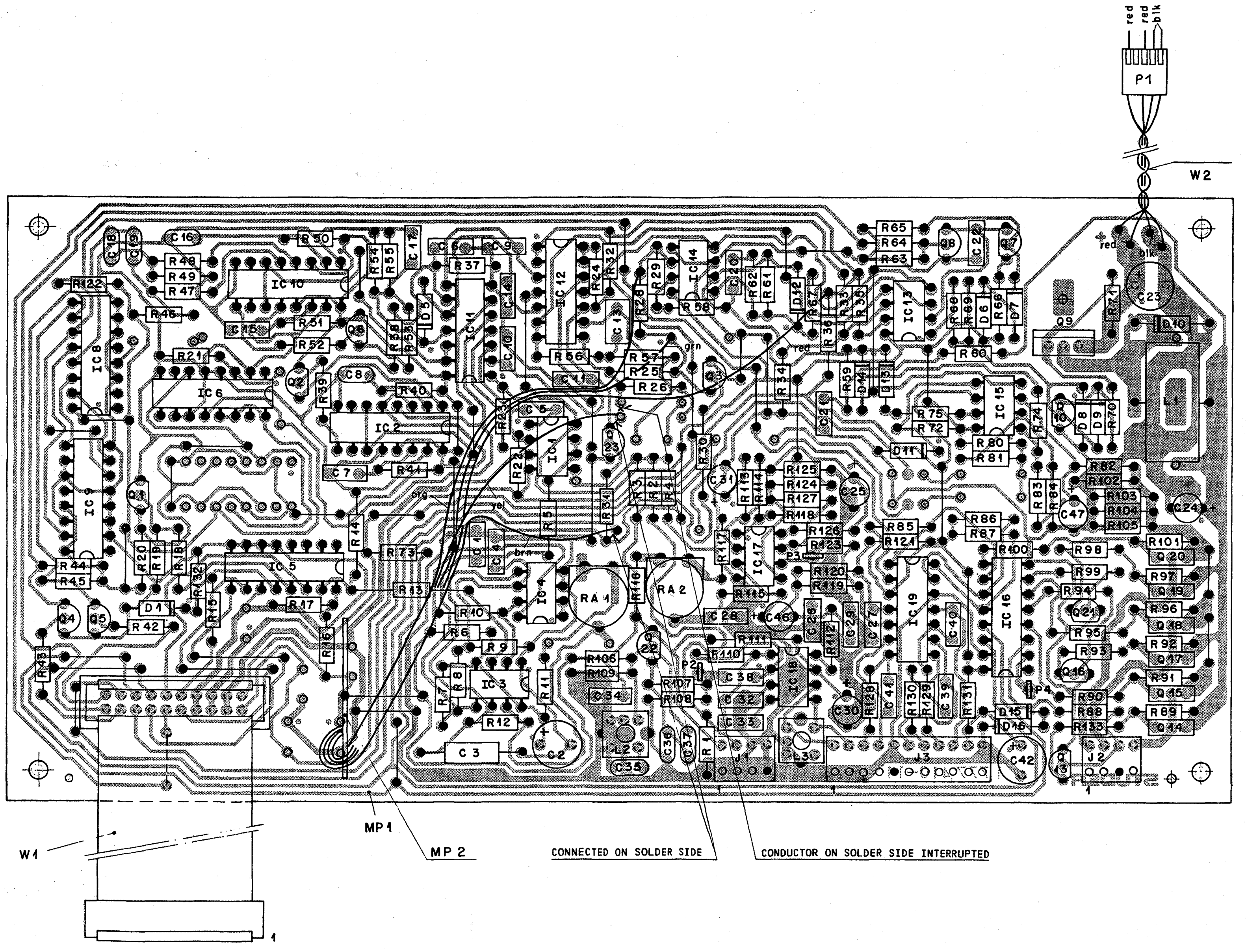
S T U D E R (01) 87/08/12 TACHO BOARD 1.777.250.00 PAGE 1

CAPSTAN SERVO BOARD 1.777.410.21


J1
+15V
KEY
VARSPV
GNDA
brn
red
org
to keyboard 1.777.450.00
IC1 4559
IC2 14538
IC3 HA 1555 PS
IC4 LM 393
IC5 REFERENZ 14052
IC6 MC 14526
IC8 14052
IC9 14526
IC10 14538
IC11 4066
IC12 LF 347
IC13 LM 393
IC14 4559
IC15 4559
IC16 R/S
IC17 LF 353
IC18 TBA 129
IC19 LM 339
(± 1%)
600Hz
to Control Board 1.777.400.20
W1
9,6 kHz
S-SYNCIN
9600 Hz ext.
S-VARISP
S-SYNC
GNGA
-15V
+5VA
GNDA
S-CAP1
S-CAP2
TACHO
S-R/S
S-SYN
Sync.
S-FORW/REW
S-CRAMPA
S-CRAMPB
38,4 kHz
grn
yel
org
brn
1.777.414.00
to Control Board 1.777.400.20
P1
W2
250µH L1
BD 900A Q9
1N4935 D10
P4
J2
R
KEY
S
T
4x1Ω
P2
P3
5,5MHz
J3
ATACHOA
ATACHOB
S-HALL AL
S-HALL AH
S-HALL BL
S-HALL BH
S-HALL CL
S-HALL CH
KEY
GNDA
+1,2V

⓪ 15.2.88 J.Eg.	○ . .	○ . .	○ . .	○ . .
	C270			PAGE 2 OF 2
STUDER	CAPSTAN SERVO BOARD		"ESE" SC	1.777.410.21

CAPSTAN SERVO BOARD 1.777.410.21



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.06.5103	.01 U	5%, 63V , PETP	
	C..0002	59.22.5101	100 U	-20%, 25V , EL	
	C..0003	59.12.7182	1800 P	1%, 63V , PS	
	C..0004	59.06.5103	.01 U	5%, 63V , PETP	
	C..0005	59.06.5103	.01 U	5%, 63V , PETP	
	C..0006	59.05.1103	.01 U	1%, 63V , PP	
	C..0007	59.06.5682	6800 P	5%, 63V , PETP	
	C..0008	59.06.5222	2200 P	5%, 63V , PETP	
	C..0009	59.06.0102	1000 P	10%, 63V , PETP	
	C..0010	59.06.5103	.01 U	5%, 63V , PETP	
	C..0011	59.06.5103	.01 U	5%, 63V , PETP	
	C..0012			not connected	
	C..0013	59.06.5474	.47 U	5%, 63V , PETP	
	C..0014	59.06.0102	1000 P	10%, 63V , PETP	
	C..0015	59.06.5682	6800 P	5%, 63V , PETP	
	C..0016	59.06.5222	2200 P	5%, 63V , PETP	
	C..0017	59.05.1103	.01 U	1%, 63V , PP	
	C..0018	59.34.4181	180 P	5%, N750 , CER	
	C..0019	59.34.4181	180 P	5%, N750 , CER	
	C..0020	59.06.5223	.022 U	5%, 63V , PETP	
	C..0021			not connected	
	C..0022	59.06.5102	1000 P	5%, 63V , PETP	
	C..0023	59.22.8220	22 U	-20%, 63V , EL	
	C..0024	59.22.8100	10 U	-20%, 63V , EL	
	C..0025	59.22.6100	10 U	-20%, 40V , EL	
	C..0026	59.06.5103	.01 U	5%, 63V , PETP	
	C..0027	59.06.5683	.068 U	5%, 63V , PETP	
	C..0028	59.06.5224	.220 U	5%, 63V , PETP	
	C..0029	59.06.5472	4700 P	5%, 63V , PETP	
	C..0030	59.22.6100	10 U	-20%, 40V , EL	
	C..0031	59.22.8109	1 U	-20%, 63V , EL	
	C..0032	59.06.5223	.022 U	5%, 63V , PETP	
	C..0033	59.06.5223	.022 U	5%, 63V , PETP	
	C..0034	59.06.5683	.068 U	5%, 63V , PETP	
	C..0035	59.34.4101	100 P	5%, N750 , CER	
	C..0036	59.34.4151	150 P	5%, N750 , CER	
	C..0037	59.34.5561	560 P	5%,N1500 , CER	

S T U D E R (00) 88/02/15 CAPSTAN-SERVO-BOARD A 1.777.410.21 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0038	59.06.5102	1000 P	5%, 63V , PETP	
	C..0039	59.06.0222	2.2 nF	10%, 63V , PETP	
	C..0040	59.06.0222	2.2 nF	10%, 63V , PETP	
	C..0041	59.06.0222	2.2 nF	10%, 63V , PETP	
	C..0042	59.22.6220	22 U	-20%, 40V , EL	
	C..0043			not connected	
	C..0044			not connected	
	C..0045			not connected	
	C..0046	59.22.8229	2.2 U	-20%, 50V , EL	
	C..0047	59.22.6100	10 U	-20%, 40V , EL	
	D..0001	50.04.1112	5.1 V	5%, 0.40W, Z,	ITT,Mot
	D..0002			not connected	
	D..0003			not connected	
	D..0004			not connected	
	D..0005	50.04.0134		1N 3595 DHD, FDH 300	Fc,Ses
	D..0006	50.04.0125		1N 4448 SI	
	D..0007	50.04.0125		1N 4448 SI	
	D..0008	50.04.0125		1N 4448 SI	
	D..0009	50.04.0125		1N 4448 SI	
	D..0010	50.04.0508		1N 4935..37, BYW 100-200	GI
	D..0011	50.04.1101	3.9 V	5%, 0.40W, Z,	ITT,Mot,Ph
	D..0012	50.04.0125		1N 4448 SI	
	D..0013	50.04.0125		1N 4448 SI	
	D..0014	50.04.0125		1N 4448 SI	
	D..0015	50.04.0125		1N 4448 SI	
	D..0016	50.04.0125		1N 4448 SI	
	IC.0001	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0002	50.07.1538		MC14 538 BCP, HEF 4538 BP,A	Mot,Ph
	IC.0003	50.05.0158		HA 1555 PS	Sig,Mot,Ra
	IC.0004	50.05.0283		LM 393 P	TI,NS
	IC.0005	50.07.0024		MC 14052 BCP, 4052 BCP ,A	Mot,SGS
	IC.0006	50.07.0526		4 526 BPC , MC14 526 BCP ,A	Ph,Mot
	IC.0008	50.07.0024		MC 14052 BCP, 4052 BCP ,A	Mot,SGS
	IC.0009	50.07.0526		4 526 BPC , MC14 526 BCP ,A	Ph,Mot
	IC.0010	50.07.1538		MC14 538 BCP, HEF 4538 BP,A	MOT,Ph

S T U D E R (00) 88/02/15 CAPSTAN-SERVO-BOARD A 1.777.410.21 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	IC.0011	50.07.0066		4066 BPC , MC14066 BCP ,A	Ph,Mot
	IC.0012	50.09.0104		LF 347 N ,A	NS
	IC.0013	50.05.0283		LM 393 , TDB 0193 DP ,A	TI,NS
	IC.0014	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0015	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0016	1.777.411.20		CAPSTAN COMMUTATOR LOGIC	St
	IC.0017	50.09.0101		TL 072 CP , LF 353 N ,A	TI,Tho
	IC.0018	50.11.0137		TBA 129	Sie
	IC.0019	50.11.0104		LM 339 N ,A	NS,Fc,Mot
	J..0001	54.01.0241	4 POL.	STRIP CIS	AMP
	J..0002	54.01.0241	4 POL.	STRIP CIS	AMP
	J..0003	54.01.0291	11 POL.	STRIP CIS	AMP
	L..0001	62.03.0025	250 MH	2 A , FILTER	Tokin
	L..0002	1.022.222.00	16 MH	HF-DROSSEL	St
	L..0003	1.022.222.00	16 MH	HF-DROSSEL	
	P..0001	54.01.0264	5 POL.	CASING CIS	St
	P..0002	54.02.0320		TEST POINT	St
	P..0003	54.02.0320		TEST POINT	St
	P..0004	54.02.0320		TEST POINT	St
	MP.0001	1.777.410.11		CAPSTAN-SERVO PCB	St
	MP.0002	1.777.414.00		FAST START BOARD	
	Q..0001	50.03.0340		BC 337-25	ITT,Ph
	Q..0002	50.03.0351		BC 327-25	Sie,ITT
	Q..0003	50.03.0340		BC 337-25	
	Q..0004	50.03.0340		BC 337-25	
	Q..0005	50.03.0340		BC 337-25	
	Q..0006	50.03.0351		BC 327-25	
	Q..0007	50.03.0496		BC 560 ,A	Sie
	Q..0008	50.03.0340		BC 337-25	
	Q..0009	50.03.0513		BD 900 A BDW 94 B	Mot,SGS
	Q..0010	50.03.0491		BC 546 B	ITT,Ph,Mot,Sie
	Q..0011			not connected	

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CAPSTAN SERVO BOARD 1.777.410.21

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	Q..0012			not connected	
	Q..0013	50.03.0491		BC 546 B	
	Q..0014	50.03.0799		BD 680	Ph
	Q..0015	50.03.0749		BD 679	Ph
	Q..0016	50.03.0491		BC 546 B	
	Q..0017	50.03.0799		BD 680	Ph
	Q..0018	50.03.0749		BD 679	Ph
	Q..0019	50.03.0799		BD 680	Ph
	Q..0020	50.03.0749		BD 679	Ph
	Q..0021	50.03.0491		BC 546 B	
	Q..0022	50.03.0514		BF 366	Mot
	Q..0023	50.03.0340		BC 337-25	
	Q..0024	50.03.0329		WP 146-TR	Si
	R..0001	57.11.4393	39 K	2%, 0207 , MF	
	R..0002	57.11.4272	2.7 K	2%, 0207 , MF	
	R..0003	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0004	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0005	57.11.4221	220	2%, 0207 , MF	
	R..0006	57.11.4479	4.7	2%, 0207 , MF	
	R..0007	57.11.4103	10 K	2%, 0207 , MF	
	R..0008	57.11.4103	10 K	2%, 0207 , MF	
	R..0009	57.11.4103	10 K	2%, 0207 , MF	
	R..0010	57.11.4103	10 K	2%, 0207 , MF	
	R..0011	57.11.3133	13 K	1%, 0207 , MF	
	R..0012	57.11.4333	33 K	2%, 0207 , MF	
	R..0013	57.11.4682	6.8 K	2%, 0207 , MF	
	R..0014	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0015	57.11.4102	1 K	2%, 0207 , MF	
	R..0016	57.11.4103	10 K	2%, 0207 , MF	
	R..0017	57.11.4103	10 K	2%, 0207 , MF	
	R..0018	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0019	57.11.4153	15 K	2%, 0207 , MF	
	R..0020	57.11.4153	15 K	2%, 0207 , MF	
	R..0021	57.11.4223	22 K	2%, 0207 , MF	
	R..0022	57.11.4104	100 K	2%, 0207 , MF	
	R..0023	57.11.4122	1.2 K	2%, 0207 , MF	

S T U D E R (00) 88/02/15 CAPSTAN-SERVO-BOARD A 1.777.410.21 PAGE 4

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0024	57.11.4823	82 K	2%, 0207 , MF	
	R..0025	57.11.4273	27 K	2%, 0207 , MF	
	R..0026	57.11.4105	1 M	2%, 0207 , MF	
	R..0027			not connected	
	R..0028	57.11.4273	27 K	2%, 0207 , MF	
	R..0029	57.11.4104	100 K	2%, 0207 , MF	
	R..0030	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0031	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0032	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0033	57.11.4561	560	2%, 0207 , MF	
	R..0034	57.11.4103	10 K	2%, 0207 , MF	
	R..0035	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0036	57.11.4102	1 K	2%, 0207 , MF	
	R..0037	57.11.3224	220 K	1%, 0207 , MF	
	R..0038	57.11.4221	220	2%, 0207 , MF	
	R..0039	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0040	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0041	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0042	57.11.4333	33 K	2%, 0207 , MF	
	R..0043	57.11.4333	33 K	2%, 0207 , MF	
	R..0044	57.11.4333	33 K	2%, 0207 , MF	
	R..0045	57.11.4333	33 K	2%, 0207 , MF	
	R..0046	57.11.4223	22 K	2%, 0207 , MF	
	R..0047	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0048	57.11.4223	22 K	2%, 0207 , MF	
	R..0049	57.11.4474	470 K	2%, 0207 , MF	
	R..0050	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0051	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0052	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0053	57.11.4221	220	2%, 0207 , MF	
	R..0054	57.11.3564	560 K	1%, 0207 , MF	
	R..0055	57.11.3364	360 K	1%, 0207 , MF	
	R..0056	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0057	57.11.4682	6.8 K	2%, 0207 , MF	
	R..0058	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0059	57.11.4123	12 K	2%, 0207 , MF	
	R..0060	57.11.4152	1.5 K	2%, 0207 , MF	

S T U D E R (00) 88/02/15 CAPSTAN-SERVO-BOARD A 1.777.410.21 PAGE 5

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0061	57.11.4105	1 M	2%, 0207 , MF	
	R..0062	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0063	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0064	57.11.4182	1.8 K	2%, 0207 , MF	
	R..0065	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0066	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0067	57.11.4102	1 K	2%, 0207 , MF	
	R..0068	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0069	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0070	57.11.4682	6.8 K	2%, 0207 , MF	
	R..0071	57.11.4561	560	2%, 0207 , MF	
	R..0072	57.11.4223	22 K	2%, 0207 , MF	
	R..0073	57.11.4103	10 K	2%, 0207 , MF	
	R..0074	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0075	57.11.4102	1 K	2%, 0207 , MF	
	R..0076			not connected	
	R..0077			not connected	
	R..0078			not connected	
	R..0079			not connected	
	R..0080	57.11.4122	1.2 K	2%, 0207 , MF	
	R..0081	57.11.3911	910	1%, 0207 , MF	
	R..0082	57.11.4102	1 K	2%, 0207 , MF	
	R..0083	57.11.4333	33 K	2%, 0207 , MF	
	R..0084	57.11.4101	100	2%, 0207 , MF	
	R..0085	57.11.4103	10 K	2%, 0207 , MF	
	R..0086	57.11.4103	10 K	2%, 0207 , MF	
	R..0087	57.11.4103	10 K	2%, 0207 , MF	
	R..0088	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0089	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0090	57.11.4561	560	2%, 0207 , MF	
	R..0091	57.11.4102	1 K	2%, 0207 , MF	
	R..0092	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0093	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0094	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0095	57.11.4561	560	2%, 0207 , MF	
	R..0096	57.11.4102	1 K	2%, 0207 , MF	
	R..0097	57.11.4222	2.2 K	2%, 0207 , MF	

S T U D E R (00) 88/02/15 CAPSTAN-SERVO-BOARD A 1.777.410.21 PAGE 6

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0098	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0099	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0100	57.11.4561	560	2%, 0207 , MF	
	R..0101	57.11.4102	1 K	2%, 0207 , MF	
	R..0102	57.11.4109	1	2%, 0207 , MF	
	R..0103	57.11.4109	1	2%, 0207 , MF	
	R..0104	57.11.4109	1	2%, 0207 , MF	
	R..0105	57.11.4109	1	2%, 0207 , MF	
	R..0106	57.11.4103	10 K	2%, 0207 , MF	
	R..0107	57.11.4102	1 K	2%, 0207 , MF	
	R..0108	57.11.4121	120	2%, 0207 , MF	
	R..0109	57.11.4103	10 K	2%, 0207 , MF	
	R..0110	57.11.4681	680	2%, 0207 , MF	
	R..0111	57.11.4121	120	2%, 0207 , MF	
	R..0112	57.11.4102	1 K	2%, 0207 , MF	
	R..0113	57.11.4102	1 K	2%, 0207 , MF	
	R..0114	57.11.4273	27 K	2%, 0207 , MF	
	R..0115	57.11.4223	22 K	2%, 0207 , MF	
	R..0116	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0117	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0118	57.11.4103	10 K	2%, 0207 , MF	
	R..0119	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0120	57.11.4103	10 K	2%, 0207 , MF	
	R..0121	57.11.4103	10 K	2%, 0207 , MF	
	R..0122	57.11.4682	6.8 K	2%, 0207 , MF	
	R..0123	57.11.4103	10 K	2%, 0207 , MF	
	R..0124	57.11.4103	10 K	2%, 0207 , MF	
	R..0125	57.11.4103	10 K	2%, 0207 , MF	
	R..0126	57.11.4103	10 K	2%, 0207 , MF	
	R..0127	57.11.4105	1 M	2%, 0207 , MF	
	R..0128	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0129	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0130	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0131	57.11.4221	220	2%, 0207 , MF	
	R..0132	57.11.4473	47 K	2%, 0207 , MF	
	R..0133	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0134	57.11.4105	1 M	2%, 0207 , MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0135	57.11.4104	100 K	2%, 0207 , MF	
	R..0136	57.11.5125	1.2 M	5%, 0207 , MF	
	RA.0001	58.02.5103	10 K	20%, .1 W , PCSCH	Ph,Draloric
	RA.0002	58.02.5221	220	20%, .1 W , PCSCH	Ph,Draloric
	W..0001	1.023.112.10	20 POL.	FLATCABLE CAPSTAN SERVO	St
	W..0002	1.777.410.93		WL-CAPSTAN SERVO (1)	St

MANUFACTURER: Mot=Motorola, NS=National Semiconductors, Ph=Philips
Sig=Signetics, St=Studer, TI=Texas Instruments,Sie=Siemens
SGS=SGS/Ates,Ra=Raytheon,NEC=Nippon Electric Corp.,Fc=Fairchild
Ses=Sescosem,GI=General Instruments,ITT=Intermetall,Tho=Thomsen
AMP=AMP Incorporated,Si=Siliconix.

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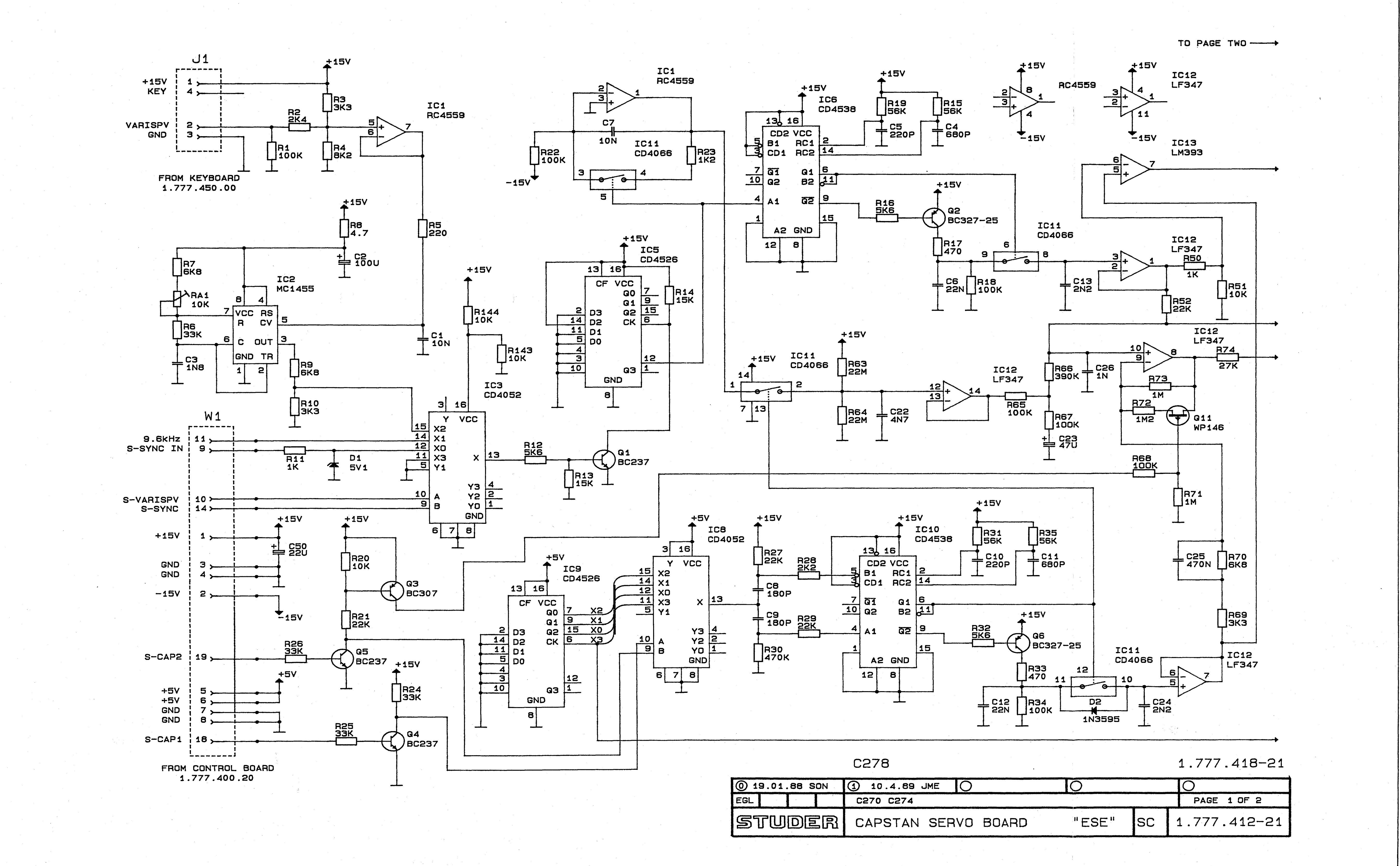
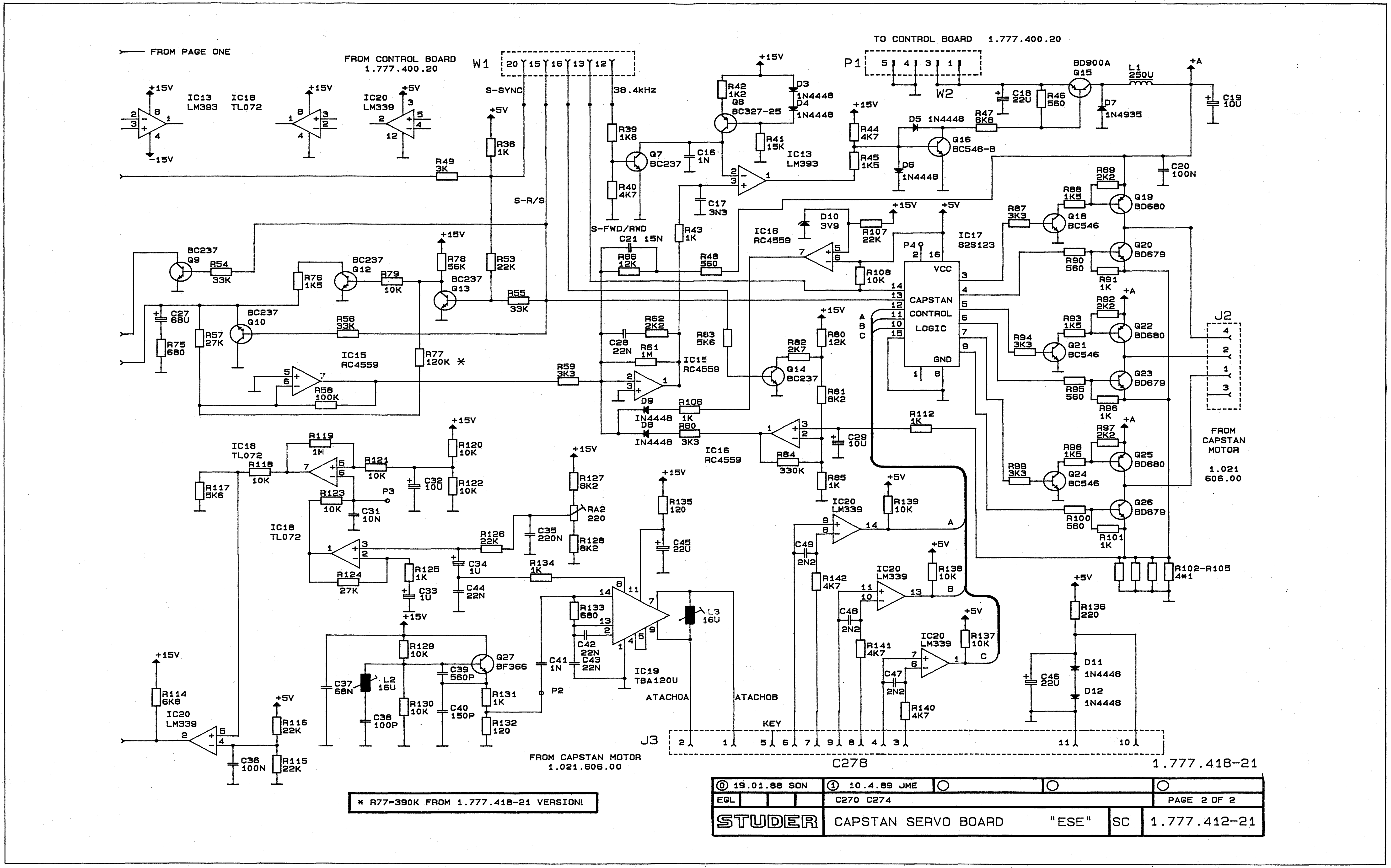
S T U D E R (00) 88/02/15 CAPSTAN-SERVO-BOARD A 1.777.410.21 PAGE 8

CAPSTAN SERVO BOARD 1.777.412.21


TO PAGE TWO
J1
+15V 1
KEY 4
VARISPV 2
GND 3
FROM KEYBOARD
1.777.450.00
R1 100K
R2 2K4
R3 3K3
R4 8K2
IC1 RC4559
R5 220
R6 33K
R7 6K8
R8 4.7
R9 6K8
R10 3K3
RA1 10K
C1 10N
C2 100U
C3 1N8
IC2 MC1455
VCC RS R CV C OUT GND TR
W1
9.6kHz 11
S-SYNC IN 9
R11 1K
D1 5V1
S-VARISPV 10
S-SYNC 14
+15V 1
GND 3
GND 4
-15V 2
S-CAP2 19
+5V 5
+5V 6
GND 7
GND 8
S-CAP1 18
FROM CONTROL BOARD
1.777.400.20
C50 22U
R20 10K
R21 22K
Q3 BC307
R26 33K
Q5 BC237
R24 33K
R25 33K
Q4 BC237
IC3 CD4052
R144 10K
R143 10K
R12 5K6
R13 15K
Q1 BC237
IC5 CD4526
R14 15K
CF VCC Q0 Q1 Q2 CK D3 D2 D1 D0 Q3 GND
C7 10N
R22 100K
R23 1K2
IC11 CD4066
IC6 CD4538
CD2 VCC B1 RC1 CD1 RC2 Q1 Q2 A1 A2 GND
R19 56K
R15 56K
C5 220P
C4 680P
R16 5K6
Q2 BC327-25
R17 470
C6 22N
R18 100K
RC4559
IC12 LF347
IC13 LM393
C13 2N2
R50 1K
R51 10K
R52 22K
R63 22M
R64 22M
C22 4N7
R65 100K
R66 390K
C26 1N
R67 100K
C23 47U
R73 1M
R72 1M2
R74 27K
Q11 WP146
R68 100K
R71 1M
IC8 CD4052
IC9 CD4526
R27 22K
R28 2K2
C8 180P
C9 180P
R29 22K
R30 470K
IC10 CD4538
R31 56K
R35 56K
C10 220P
C11 680P
R32 5K6
Q6 BC327-25
R33 470
R34 100K
C12 22N
D2 1N3595
C24 2N2
C25 470N
R70 6K8
R69 3K3
+15V
-15V
+5V
C278
1.777.418-21

⓪ 19.01.88 SON	① 10.4.89 JME	○	○	○
EGL	C270 C274			PAGE 1 OF 2
STUDER	CAPSTAN SERVO BOARD	"ESE"	SC	1.777.412-21

CAPSTAN SERVO BOARD 1.777.412.21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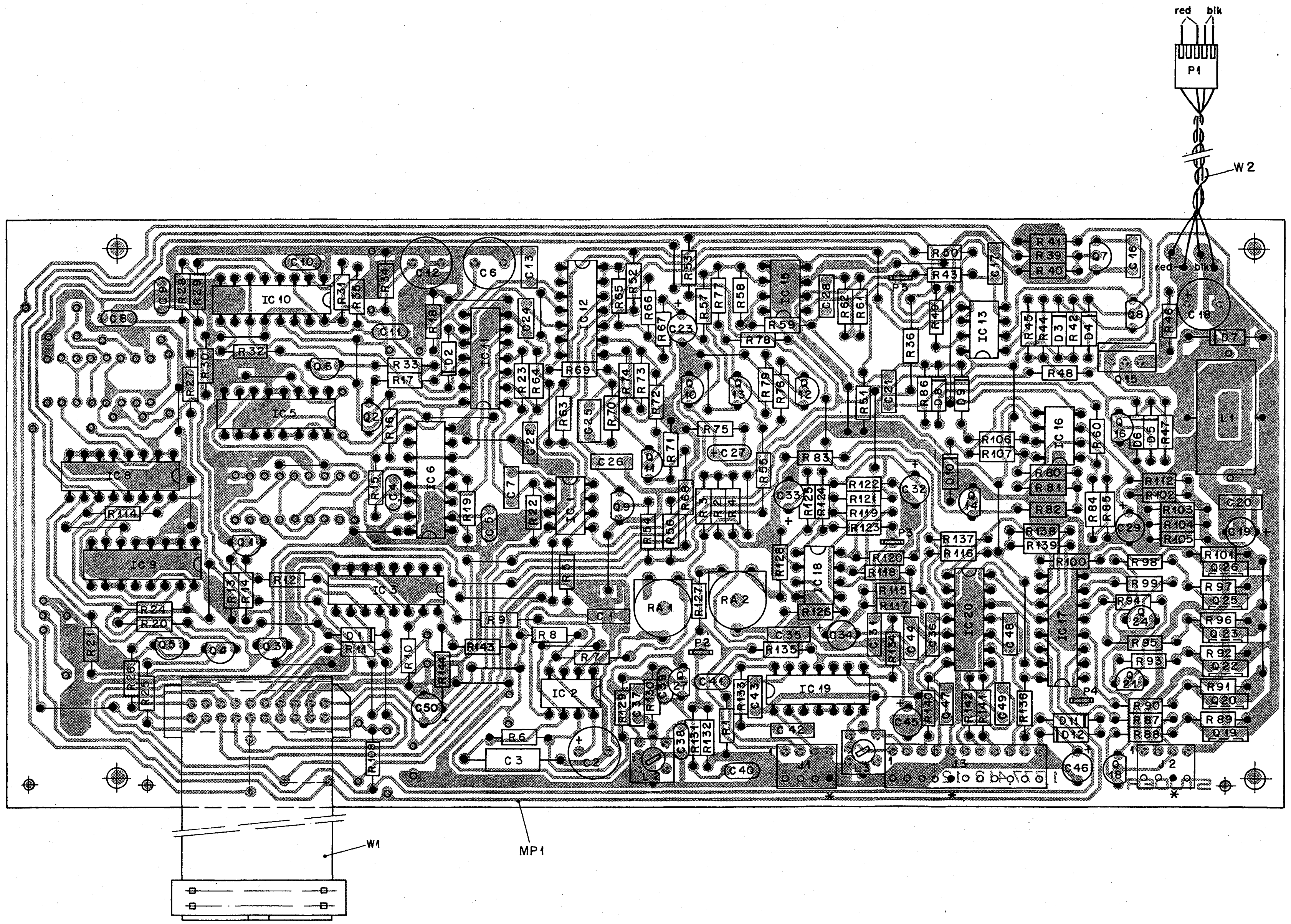
FROM CONTROL BOARD 1.777.400.20
TO CONTROL BOARD 1.777.400.20
W1
20 15 16 13 12
S-SYNC
38.4kHz
S-R/S
S-FWD/RWD
P1
5 4 3 1
W2
IC13 LM393
IC18 TL072
IC20 LM339
IC15 RC4559
IC16 RC4559
IC17 82S123
CAPSTAN CONTROL LOGIC
VCC
GND
P4
IC19 TBA120U
Q7 BC237
Q8 BC327-25
Q9 BC237
Q10 BC237
Q12 BC237
Q13 BC237
Q14 BC237
Q15 BD900A
Q16 BC546-B
Q18 BC546
Q19 BD680
Q20 BD679
Q21 BC546
Q22 BD680
Q23 BD679
Q24 BC546
Q25 BD680
Q26 BD679
Q27 BF366
D3 1N4448
D4 1N4448
D5 1N4448
D6 1N4448
D7 1N4935
D8 1N4448
D9 1N4448
D10 3V9
D11 1N4448
D12 1N4448
L1 250U
L2 16U
L3 16U
RA2 220
R102-R105 4*1
+15V
-15V
+5V
+A
J2
FROM CAPSTAN MOTOR 1.021.606.00
P2
P3
ATACHOA
ATACHOB
KEY
J3
C278
1.777.418-21
FROM CAPSTAN MOTOR 1.021.606.00
* R77=390K FROM 1.777.418-21 VERSION!
R77 120K *
⓪ 19.01.88 SON
① 10.4.89 JME
EGL
C270 C274
PAGE 2 OF 2
STUDER
CAPSTAN SERVO BOARD "ESE"
SC
1.777.412-21

CAPSTAN SERVO BOARD 1.777.412.21



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C.....1	59.06.0103	10 nF	10%, 63V, PE	
	C.....2	59.22.5101	100 uF	-20%, 25V, EL	
	C.....3	59.12.7182	1.8 nF	1%, 63V, PS	
	C.....4	59.32.2681	680 pF	10%, 50V, Cer	
	C.....5	59.34.4221	220 pF	5%, 63V, Cer	
	C.....6	59.05.1223	22 nF	1%, 63V, PP	
	C.....7	59.06.5103	10 nF	5%, 63V, PE	
	C.....8	59.34.4181	180 pF	5%, 63V, Cer	
	C.....9	59.34.4181	180 pF	5%, 63V, Cer	
	C....10	59.34.4221	220 pF	5%, 63V, Cer	
	C....11	59.32.2681	680 pF	10%, 50V, Cer	
	C....12	59.05.1223	22 nF	1%, 63V, PP	
	C....13	59.06.0222	2.2 nF	10%, 63V, PE	
	C....16	59.06.5102	1 nF	5%, 63V, PE	
	C....17	59.06.0332	3.3 nF	10%, 63V, PE	
	C....18	59.22.8220	22 uF	-20%, 63V, EL	
	C....19	59.22.6100	10 uF	-20%, 35V, EL	
	C....20	59.06.0104	100 nF	10%, 63V, PE	
	C....21	59.06.0153	15 nF	10%, 63V, PE	
	C....22	59.06.0472	4.7 nF	10%, 63V, PE	
	C....23	59.22.3470	47 uF	-20%, 10V, EL	
	C....24	59.06.0222	2.2 nF	10%, 63V, PE	
	C....25	59.06.5474	470 nF	5%, 63V, PE	
	C....26	59.06.0102	1 nF	10%, 63V, PE	
	C....27	59.26.0680	68 uF	20%, 6.3V, SAL	
	C....28	59.06.0223	22 nF	10%, 63V, PE	
	C....29	59.22.6100	10 uF	-20%, 35V, EL	
	C....31	59.06.0103	10 nF	10%, 63V, PE	
	C....32	59.22.6100	10 uF	-20%, 35V, EL	
	C....33	59.22.8109	1 uF	-20%, 63V, EL	
	C....34	59.22.8109	1 uF	-20%, 63V, EL	
	C....35	59.06.0224	220 nF	10%, 63V, PE	
	C....36	59.06.0104	100 nF	10%, 63V, PE	
	C....37	59.06.0683	68 nF	10%, 63V, PE	
	C....38	59.34.4101	100 pF	5%, 63V, Cer	
	C....39	59.34.5561	560 pF	5%, 63V, Cer	
	C....40	59.34.4151	150 pF	5%, 63V, Cer	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C....41	59.32.4102	1 nF	20%, 63V, Cer	
	C....42	59.06.0223	22 nF	10%, 63V, PE	
	C....43	59.06.0223	22 nF	10%, 63V, PE	
	C....44	59.06.0223	22 nF	10%, 63V, PE	
(00)	C....45	59.22.8220	22 uF	-20%, 63V, EL	
(01)	C....45	59.22.6220	22 uF	-20%, 35V, EL	
(00)	C....46	59.22.8220	22 uF	-20%, 63V, EL	
(01)	C....46	59.22.6220	22 uF	-20%, 35V, EL	
	C....47	59.06.0222	2.2 nF	10%, 63V, PE	
	C....48	59.06.0222	2.2 nF	10%, 63V, PE	
	C....49	59.06.0222	2.2 nF	10%, 63V, PE	
(00)	C....50	59.22.8220	22 uF	-20%, 63V, EL	
(01)	C....50	59.22.6220	22 uF	-20%, 35V, EL	
	D.....1	50.04.1112	5.1 V	10%, 0.5W	
	D.....2	50.04.0134	1N 3595		
	D.....3	50.04.0125	1N 4448		
	D.....4	50.04.0125	1N 4448		
	D.....5	50.04.0125	1N 4448		
	D.....6	50.04.0125	1N 4448		
	D.....7	50.04.0508	1N 4935		
	D.....8	50.04.0125	1N 4448		
	D.....9	50.04.0125	1N 4448		
	D....10	50.04.1101	3.9 V	10%, 0.5W	
	D....11	50.04.0125	1N 4448		
	D....12	50.04.0125	1N 4448		
	IC....1	50.09.0107	RC 4559	Dual Op. Amp	Ra,NEC
	IC....2	50.07.0036	ICM 7555	CMOS	Mot,Sig,Ra
	IC....3	50.07.0024	MC 14052	CMOS	Mot,SGS
	IC....5	50.07.0526	MC 14526	CMOS	Mot,Ph
	IC....6	50.07.1538	MC 14538	CMOS	Mot,Ph
	IC....8	50.07.0024	MC 14052	CMOS	Mot,SGS
	IC....9	50.07.0526	MC 14526	CMOS	Mot,Ph
	IC...10	50.07.1538	MC 14538	CMOS	Mot,Ph
	IC...11	50.07.0066	CD 4066	CMOS	Mot,Ph
	IC...12	50.09.0104	LF 347 N	Quad Op. Amp	NS

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	IC...13	50.05.0283	LM 393	Dual Comparator	TI,NS
	IC...15	50.09.0107	RC 4559	Dual Op. Amp	Ra,NEC
	IC...16	50.09.0107	RC 4559	Dual Op. Amp	Ra,NEC
	IC...17	1.777.411.20		CAPSTAN COMMUTATOR LOGIC	St
	IC...18	50.09.0101	TL 072	Dual Op. Amp	TI,Tho
	IC...19	50.11.0151	TBA 120 U	FM-Demodulator	Sie
	IC...20	50.11.0104	LM 339 N	Quad Comparator	NS,Fc,Mot
	J.....1	54.01.0241	4 pol	Strip CIS	AMP
	J.....2	54.01.0241	4 pol	Strip CIS	AMP
	J.....3	54.01.0291	11 pol	Strip CIS	AMP
	L.....1	62.03.0025	250 uH	2 A , FILTER	Tokin
	L.....2	1.022.222.00	16 uH	HF-DROSSEL	
	L.....3	1.022.222.00	16 uH	HF-DROSSEL	
(00)	MP....1	1.777.413.11		CAPSTAN-SERVO PCB	
(01)	MP....1	1.777.413.12		CAPSTAN-SERVO PCB	
	P.....1	54.01.0264	5 pol	Casing CIS	
	P.....2	54.02.0320		Test Point	
	P.....3	54.02.0320		Test Point	
	P.....4	54.02.0320		Test Point	
	P.....5	54.02.0320		Test Point	
	Q.....1	50.03.0436	BC 237-B	NPN	
	Q.....2	50.03.0351	BC 327-25	PNP	
	Q.....3	50.03.0515	BC 307-B	PNP	
	Q.....4	50.03.0436	BC 237-B	NPN	
	Q.....5	50.03.0436	BC 237-B	NPN	
	Q.....6	50.03.0351	BC 327-25	PNP	
	Q.....7	50.03.0436	BC 237-B	NPN	
	Q.....8	50.03.0351	BC 327-25	PNP	
	Q.....9	50.03.0436	BC 237-B	NPN	
	Q....10	50.03.0436	BC 237-B	NPN	
	Q....11	50.03.0329	WP 146	FET P-Channel	
	Q....12	50.03.0436	BC 237-B	NPN	

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CAPSTAN SERVO BOARD 1.777.412.21

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	Q....13	50.03.0436	BC 237-B	NPN	
	Q....14	50.03.0436	BC 237-B	NPN	
	Q....15	50.03.0513	BD 900-A	PNP-Darlington	
	Q....16	50.03.0491	BC 546-B	NPN	
	Q....18	50.03.0491	BC 546-B	NPN	
	Q....19	50.03.0505	BD 680	PNP-Darlington	
	Q....20	50.03.0504	BD 679	NPN-Darlington	
	Q....21	50.03.0491	BC 546-B	NPN	
	Q....22	50.03.0505	BD 680	PNP-Darlington	
	Q....23	50.03.0504	BD 679	NPN-Darlington	
	Q....24	50.03.0491	BC 546-B	NPN	
	Q....25	50.03.0505	BD 680	PNP-Darlington	
	Q....26	50.03.0504	BD 679	NPN-Darlington	
	Q....27	50.03.0514	BF 366	NPN	
	R.....1	57.11.3104	100 KOhm	2%, .25W, MF	
	R.....2	57.11.3242	2.4 KOhm	2%, .25W, MF	
	R.....3	57.11.3332	3.3 KOhm	2%, .25W, MF	
	R.....4	57.11.3822	8.2 KOhm	2%, .25W, MF	
	R.....5	57.11.3221	220 Ohm	2%, .25W, MF	
	R.....6	57.11.3333	33 KOhm	2%, .25W, MF	
	R.....7	57.11.3682	6.8 KOhm	1%, .25W, MF	
	R.....8	57.11.3479	4.7 Ohm	2%, .25W, MF	
	R.....9	57.11.3682	6.8 KOhm	2%, .25W, MF	
	R....10	57.11.3332	3.3 KOhm	2%, .25W, MF	
	R....11	57.11.3102	1 KOhm	2%, .25W, MF	
	R....12	57.11.3562	5.6 KOhm	2%, .25W, MF	
	R....13	57.11.3153	15 KOhm	2%, .25W, MF	
	R....14	57.11.3153	15 KOhm	2%, .25W, MF	
	R....15	57.11.3563	56 KOhm	2%, .25W, MF	
	R....16	57.11.3562	5.6 KOhm	2%, .25W, MF	
	R....17	57.11.3471	470 Ohm	2%, .25W, MF	
	R....18	57.11.3104	100 KOhm	1%, .25W, MF	
	R....19	57.11.3563	56 KOhm	2%, .25W, MF	
	R....20	57.11.3103	10 KOhm	2%, .25W, MF	
	R....21	57.11.3223	22 KOhm	2%, .25W, MF	
	R....22	57.11.3104	100 KOhm	2%, .25W, MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R....23	57.11.3122	1.2 KOhm	2%, .25W, MF	
	R....24	57.11.3333	33 KOhm	2%, .25W, MF	
	R....25	57.11.3333	33 KOhm	2%, .25W, MF	
	R....26	57.11.3333	33 KOhm	2%, .25W, MF	
	R....27	57.11.3223	22 KOhm	2%, .25W, MF	
	R....28	57.11.3222	2.2 KOhm	2%, .25W, MF	
	R....29	57.11.3223	22 KOhm	2%, .25W, MF	
	R....30	57.11.3474	470 KOhm	2%, .25W, MF	
	R....31	57.11.3563	56 KOhm	2%, .25W, MF	
	R....32	57.11.3562	5.6 KOhm	2%, .25W, MF	
	R....33	57.11.3471	470 Ohm	2%, .25W, MF	
	R....34	57.11.3104	100 KOhm	1%, .25W, MF	
	R....35	57.11.3563	56 KOhm	2%, .25W, MF	
	R....36	57.11.3102	1 KOhm	2%, .25W, MF	
	R....39	57.11.3182	1.8 KOhm	2%, .25W, MF	
	R....40	57.11.3472	4.7 KOhm	2%, .25W, MF	
	R....41	57.11.3153	15 KOhm	2%, .25W, MF	
	R....42	57.11.3122	1.2 KOhm	2%, .25W, MF	
	R....43	57.11.3102	1 KOhm	2%, .25W, MF	
	R....44	57.11.3472	4.7 KOhm	2%, .25W, MF	
	R....45	57.11.3152	1.5 KOhm	2%, .25W, MF	
	R....46	57.11.3561	560 Ohm	2%, .25W, MF	
	R....47	57.11.3682	6.8 KOhm	2%, .25W, MF	
	R....48	57.11.3561	560 Ohm	2%, .25W, MF	
	R....49	57.11.3302	3 KOhm	2%, .25W, MF	
	R....50	57.11.3102	1 KOhm	2%, .25W, MF	
	R....51	57.11.3103	10 KOhm	2%, .25W, MF	
	R....52	57.11.3223	22 KOhm	2%, .25W, MF	
	R....53	57.11.3223	22 KOhm	2%, .25W, MF	
	R....54	57.11.3333	33 KOhm	2%, .25W, MF	
	R....55	57.11.3333	33 KOhm	2%, .25W, MF	
	R....56	57.11.3333	33 KOhm	2%, .25W, MF	
	R....57	57.11.3273	27 KOhm	2%, .25W, MF	
	R....58	57.11.3104	100 KOhm	2%, .25W, MF	
	R....59	57.11.3332	3.3 KOhm	2%, .25W, MF	
	R....60	57.11.3332	3.3 KOhm	2%, .25W, MF	
	R....61	57.11.3105	1 MOhm	2%, .25W, MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R....62	57.11.3222	2.2 KOhm	2%, .25W, MF	
	R....63	57.11.6226	22 MOhm	10%, .25W, MF	
	R....64	57.11.6226	22 MOhm	10%, .25W, MF	
	R....65	57.11.3104	100 KOhm	2%, .25W, MF	
	R....66	57.11.3394	390 KOhm	2%, .25W, MF	
	R....67	57.11.3104	100 KOhm	2%, .25W, MF	
	R....68	57.11.3104	100 KOhm	2%, .25W, MF	
	R....69	57.11.3332	3.3 KOhm	2%, .25W, MF	
	R....70	57.11.3682	6.8 KOhm	2%, .25W, MF	
	R....71	57.11.3105	1 MOhm	2%, .25W, MF	
	R....72	57.11.5125	1.2 MOhm	5%, .25W, MF	
	R....73	57.11.3105	1 MOhm	2%, .25W, MF	
	R....74	57.11.3273	27 KOhm	2%, .25W, MF	
	R....75	57.11.3681	680 Ohm	2%, .25W, MF	
	R....76	57.11.3152	1.5 KOhm	2%, .25W, MF	
	R....77	57.11.3124	120 KOhm	2%, .25W, MF	
	R....78	57.11.3563	56 KOhm	2%, .25W, MF	
	R....79	57.11.3103	10 KOhm	2%, .25W, MF	
	R....80	57.11.3123	12 KOhm	2%, .25W, MF	
	R....81	57.11.3822	8.2 KOhm	2%, .25W, MF	
	R....82	57.11.3272	2.7 KOhm	2%, .25W, MF	
	R....83	57.11.3562	5.6 KOhm	2%, .25W, MF	
	R....84	57.11.3334	330 KOhm	2%, .25W, MF	
	R....85	57.11.3102	1 KOhm	2%, .25W, MF	
	R....86	57.11.3123	12 KOhm	2%, .25W, MF	
	R....87	57.11.3332	3.3 KOhm	2%, .25W, MF	
	R....88	57.11.3152	1.5 KOhm	2%, .25W, MF	
	R....89	57.11.3222	2.2 KOhm	2%, .25W, MF	
	R....90	57.11.3561	560 Ohm	2%, .25W, MF	
	R....91	57.11.3102	1 KOhm	2%, .25W, MF	
	R....92	57.11.3222	2.2 KOhm	2%, .25W, MF	
	R....93	57.11.3152	1.5 KOhm	2%, .25W, MF	
	R....94	57.11.3332	3.3 KOhm	2%, .25W, MF	
	R....95	57.11.3561	560 Ohm	2%, .25W, MF	
	R....96	57.11.3102	1 KOhm	2%, .25W, MF	
	R....97	57.11.3222	2.2 KOhm	2%, .25W, MF	
	R....98	57.11.3152	1.5 KOhm	2%, .25W, MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R....99	57.11.3332	3.3 KOhm	2%, .25W, MF	
	R...100	57.11.3561	560 Ohm	2%, .25W, MF	
	R...101	57.11.3102	1 KOhm	2%, .25W, MF	
	R...102	57.11.3109	1 Ohm	2%, .25W, MF	
	R...103	57.11.3109	1 Ohm	2%, .25W, MF	
	R...104	57.11.3109	1 Ohm	2%, .25W, MF	
	R...105	57.11.3109	1 Ohm	2%, .25W, MF	
	R...106	57.11.3102	1 KOhm	2%, .25W, MF	
	R...107	57.11.3223	22 KOhm	2%, .25W, MF	
	R...108	57.11.3103	10 KOhm	2%, .25W, MF	
	R...112	57.11.3102	1 KOhm	2%, .25W, MF	
	R...114	57.11.3682	6.8 KOhm	2%, .25W, MF	
	R...115	57.11.3223	22 KOhm	2%, .25W, MF	
	R...116	57.11.3223	22 KOhm	2%, .25W, MF	
	R...117	57.11.3562	5.6 KOhm	2%, .25W, MF	
	R...118	57.11.3103	10 KOhm	2%, .25W, MF	
	R...119	57.11.3105	1 MOhm	2%, .25W, MF	
	R...120	57.11.3103	10 KOhm	2%, .25W, MF	
	R...121	57.11.3103	10 KOhm	2%, .25W, MF	
	R...122	57.11.3103	10 KOhm	2%, .25W, MF	
	R...123	57.11.3103	10 KOhm	2%, .25W, MF	
	R...124	57.11.3273	27 KOhm	2%, .25W, MF	
	R...125	57.11.3102	1 KOhm	2%, .25W, MF	
	R...126	57.11.3223	22 KOhm	2%, .25W, MF	
	R...127	57.11.3822	8.2 KOhm	2%, .25W, MF	
	R...128	57.11.3822	8.2 KOhm	2%, .25W, MF	
	R...129	57.11.3103	10 KOhm	2%, .25W, MF	
	R...130	57.11.3103	10 KOhm	2%, .25W, MF	
	R...131	57.11.3102	1 KOhm	2%, .25W, MF	
	R...132	57.11.3121	120 Ohm	2%, .25W, MF	
	R...133	57.11.3681	680 Ohm	2%, .25W, MF	
	R...134	57.11.3102	1 KOhm	2%, .25W, MF	
	R...135	57.11.3121	120 Ohm	2%, .25W, MF	
	R...136	57.11.3221	220 Ohm	2%, .25W, MF	
	R...137	57.11.3103	10 KOhm	2%, .25W, MF	
	R...138	57.11.3103	10 KOhm	2%, .25W, MF	
	R...139	57.11.3103	10 KOhm	2%, .25W, MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R...140	57.11.3472	4.7 KOhm	2%, .25W, MF	
	R...141	57.11.3472	4.7 KOhm	2%, .25W, MF	
	R...142	57.11.3472	4.7 KOhm	2%, .25W, MF	
(01)	R...143	57.11.3103	10 KOhm	2%, .25W, MF	
(01)	R...144	57.11.3103	10 KOhm	2%, .25W, MF	
	RA....1	58.02.5103	10 KOhm	20%, .1 W, PCSCH	
	RA....2	58.02.5221	220 Ohm	20%, .1 W, PCSCH	
	W.....1	1.023.112.10	20 pol	Flatcable	
	W.....2	1.777.410.93		Wire List	

(01) 10.04.89 Value Adjust
PE=Polyester, EL=Electrolytic, Cer=Ceramic, PP=Polypropylene

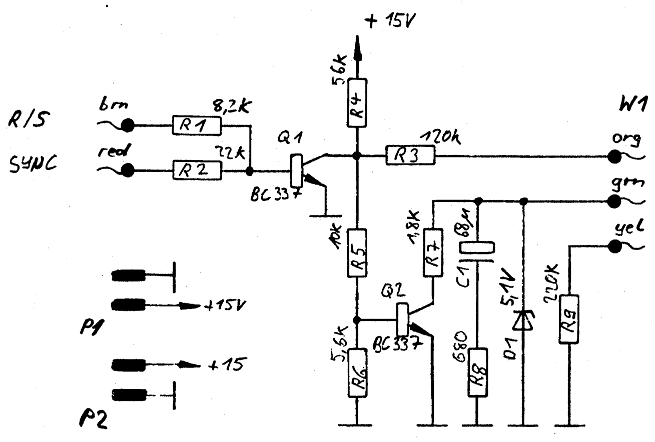
MF=Metalfilm, PCSCH=Pot. Meter Carbon Film

MANUFACTURER: Mot=Motorola, NS=National Semiconductors, Ph=Philips
Sig=Signetics, St=Studer, TI=Texas Instruments,Sie=Siemens
SGS=SGS/Ates,Ra=Raytheon,NEC=Nippon Electric Corp.,Fc=Fairchild
Ses=Sescosem,GI=General Instruments,ITT=Intermetall,Tho=Thomsen
AMP=AMP Incorporated

ORIG 88/12/15 (01) 89/04/10

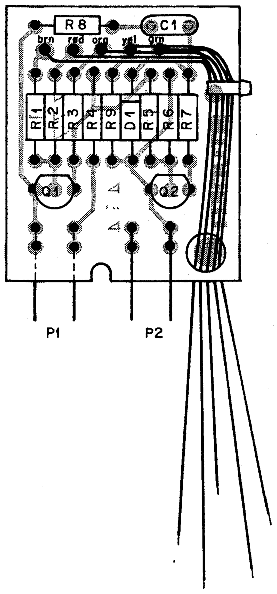
S T U D E R (01) 89/04/10 CAPSTAN-SERVO-BOARD A PL 1.777.412.21 PAGE 8

FAST START BOARD 1.777.414.00


+15V
R/S
SYNC
brn
red
R1
8,2k
R2
22k
Q1
BC337
56k
R4
W1
120k
R3
org
grn
yel
10k
R5
1,8k
R7
C1
68µ
Q2
BC337
5,1V
D1
220k
R9
5,6k
R6
680
R8
+15V
+15
P1
P2

⓪ 25.9.87 Bi J.WK	○ . .	○ . .	○ . .	○ . .
	C 270			PAGE 1 OF 1
STUDER	FAST START BOARD		SC	1.777.414.00

FAST START BOARD 1.777.414.00

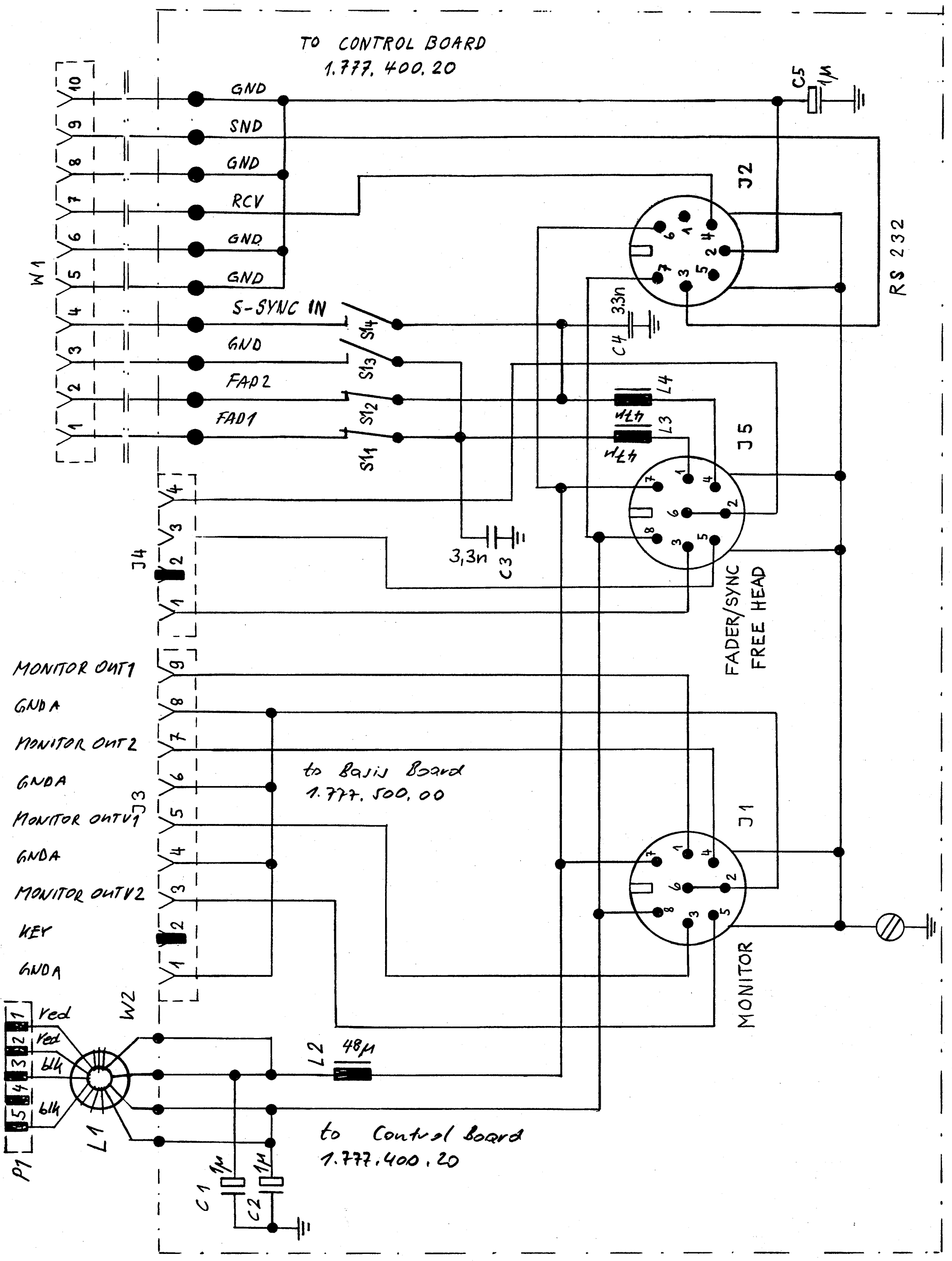


IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.26.0680	68 U	20%, 6.3V , SAL	
	D..0001	50.04.1112	5.1 V	5%, .40W , Z,	
	MP.0001	1.777.414.11		FAST START BOARD	
	P..0001	54.01.0468	2 POL	STRIP CIS ANGLES	
	P..0002	54.01.0468	2 POL	STRIP CIS ANGLES	
	Q..0001	50.03.0340	BC 337-25		
	Q..0002	50.03.0340	BC 337-25		
	R..0001	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0002	57.11.4223	22 K	2%, 0207 , MF	
	R..0003	57.11.4124	120 K	2%, 0207 , MF	
	R..0004	57.11.4563	56 K	2%, 0207 , MF	
	R..0005	57.11.4103	10 K	2%, 0207 , MF	
	R..0006	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0007	57.11.4182	1.8 K	2%, 0207 , MF	
	R..0008	57.11.4681	680	2%, 0207 , MF	
	R..0009	57.11.4224	220 K	2%, 0207 , MF	
	W..0001	1.777.414.93		WL-FAST START BOARD	

ORIG 87/09/28

STUDER (00) 87/09/28 FAST START BOARD 1.777.414.00 . PAGE 1

CONNECTION BOARD 1.777.441.00

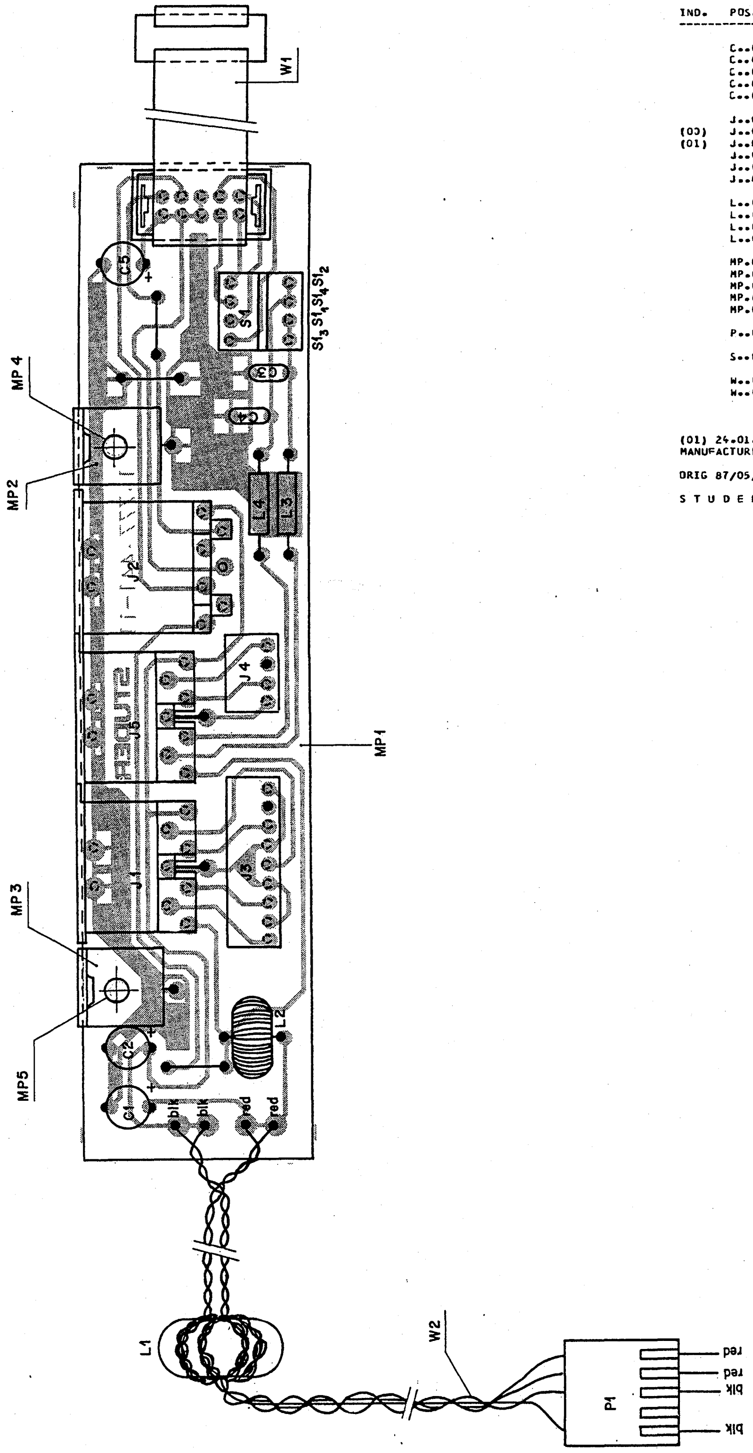

TO CONTROL BOARD
1.777.400.20
W1
10 GND
9 SND
8 GND
7 RCV
6 GND
5 GND
4 S-SYNC IN
3 GND
2 FAD2
1 FAD1
S14
S13
S12
S11
C5 1µ
J2
RS 232
C4 33n
L4 47µ
L3 47µ
J5
C3 3,3n
J4
FADER/SYNC
FREE HEAD
MONITOR OUT1
GNDA
MONITOR OUT2
GNDA
MONITOR OUTV1
GNDA
MONITOR OUTV2
KEY
GNDA
J3
to Basis Board
1.777.500.00
J1
MONITOR
W2
P1
red
red
blk
blk
L1
L2 48µ
to Control Board
1.777.400.20
C1 1µ
C2 1µ

0 1.6.87

C 270 PAGE 1 OF 1

STUDER CONNECTION BOARD SC 1.777.441.00

CONNECTION BOARD 1.777.441.00



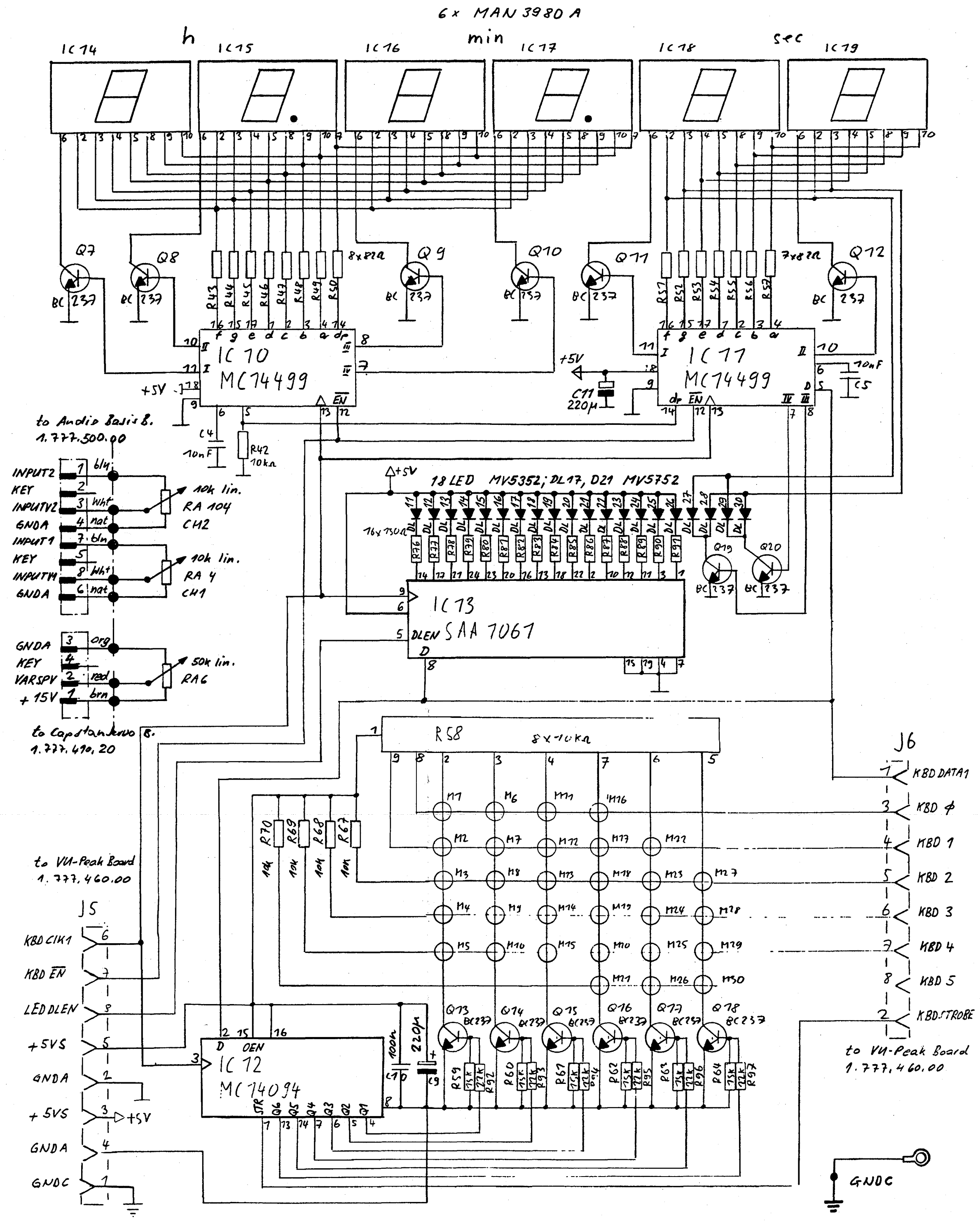
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.22.8109	1 U	-20%, 63V , EL	
	C..0002	59.22.8109	1 U	-20%, 63V , EL	
	C..0003	59.32.2332	3300 P	10%, 50V , CER	
	C..0004	59.32.2332	3300 P	10%, 50V , CER	
	C..0005	59.22.8109	1 U	-20%, 63V , EL	
	J..0001	54.20.2003	8 POL.	PRINT DIN	Hirschmann
(00)	J..0002	54.21.1247	7 POL.	PRINT DIN	Hirschmann
(01)	J..0002	54.99.0216	7 POL.	PRINT DIN	Hirschmann
	J..0003	54.01.0217	9 POL.	SOCKET STRIP CIS	AMP
	J..0004	54.01.0241	4 POL.	SOCKET STRIP CIS	AMP
	J..0005	54.20.2003	8 POL.	PRINT DIN	Hirschmann
	L..0001	61.02.0152	D20/10*7	COIL	
	L..0002	62.03.0010	48U , 2A	COIL	
	L..0003	62.01.0138	47U	COIL	
	L..0004	62.01.0138	47U	COIL	
	MP.0001	1.777.441.11		CONNECTION-PCB	St
	MP.0002	1.726.780.01		HOLDER	St
	MP.0003	1.726.780.01		HOLDER	St
	MP.0004	28.21.2405	D 3*4	RIVET	St
	MP.0005	28.21.2405	D 3*4	RIVET	St
	P..0001	54.01.0264	5 POL.	CASING CIS	AMP
	S..0001	55.12.1001	4 pcs	DIL SWITCH ON/OFF	
	W..0001	1.023.110.04		FLATCABLE 10 POL. 0.27 M	St
	W..0002	1.777.441.93		WL-CONNECTION BOARD	St

(01) 24.01.89 Number adjust
MANUFACTURER: AMP=AMP Incorporated.St=Studer.

ORIG 87/05/27 (01) 89/01/24

STUDER (01) 89/01/24 CONNECTION BOARD PL 1.777.441.00 PAGE 1

KEYBOARD 1.777.450.00


6 x MAN 3980 A
h
min
sec
IC14
IC15
IC16
IC17
IC18
IC19
Q7
Q8
Q9
Q10
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Q12
BC237
8x82Ω
7x82Ω
IC10
MC14499
IC11
MC14499
+5V
C11
220µ
10nF
C5
C4
10nF
R42
10kΩ
to Audio Basis B.
1.777.500.00
INPUT2
KEY
INPUTV2
GNDA
INPUT1
KEY
INPUTH
GNDA
blu
wht
rot
10k lin.
RA104
CH2
10k lin.
RA4
CH1
GNDA
KEY
VARSPV
+15V
org
red
brn
50k lin.
RA6
to Capstanservo 8.
1.777.470.20
18 LED MV5352; DL17, D21 MV5752
16x750Ω
Q19
Q20
IC13
SAA 1061
DLEN
R68
8x10kΩ
R70
R69
R68
R67
1M
J6
KBD DATA1
KBD φ
KBD 1
KBD 2
KBD 3
KBD 4
KBD 5
KBD STROBE
to VU-Peak Board
1.777.460.00
J5
KBD CLK1
KBD EN
LED DLEN
+5VS
GNDA
+5VS
GNDA
GNDC
+5V
IC12
MC14094
100n
220µ
C10
C9
Q13
Q14
Q15
Q16
Q17
Q18
BC237
GNDC

⓪ 21.1.87	① 12.8.87 J.M.	○ . .	○ . .	○ . .
	C 270			PAGE 1 OF 2
STUDER	KEYBOARD	"ESE"	SC	1.777.450.00

	J6.3	J6.4	J6.5	J6.6	J6.7	J6.8
Q 13	SEL M 1	STEP M 2	TRANS M 3	SEARCH M 4	RESET M 5	
Q 14	Z-LOG M 6 (D 27)	A-LOG M 7 (D 28)	LOOP M 8 (D 29)	T-DUMP M 9 (D 30)	EDIT M 10 (D 26)	
Q 15	<< M 11	>> M 12	PLAY M 13	STOP M 14	REC M 15	
Q 16	READY 1 M 16 (D 21)	INPUT 1 M 17 (D 25)	SYNC 1 M 18 (D 22)	REPRO 1 M 19 (D 24)	MIC M 20 (D 23)	UNCALINP. M 21 (D 18)
Q 17		LINE M 22 (D 11)	READY 2 M 23 (D 17)	INPUT 2 M 24 (D 12)	SYNC 2 M 25 (D 19)	REPRO 2 M 26 (D 16)
Q 18			UNCALOUT. M 27 (D 13)	SLOW M 28 (D 20)	FAST M 29 (D 15)	VARISPEED M 30 (D 14)

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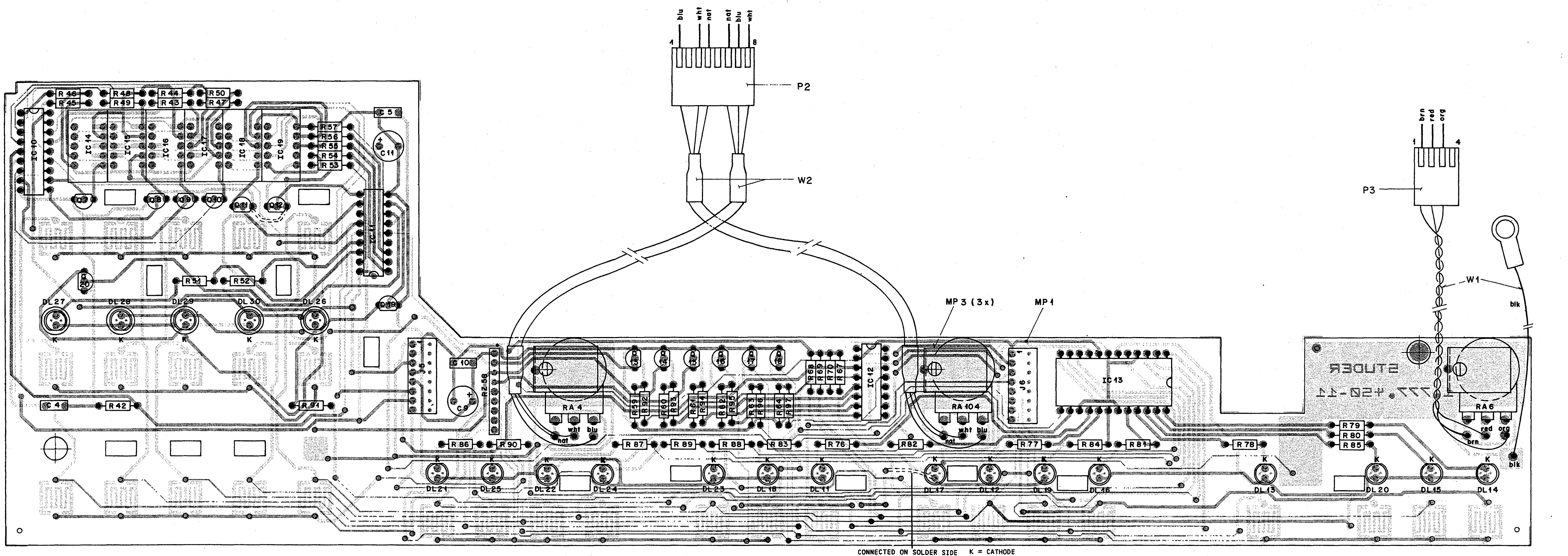
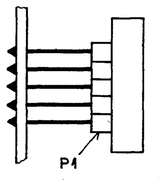
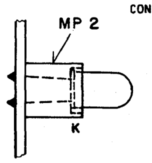
KEYBOARD 1.777.450.00

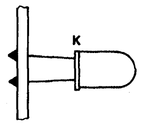




IC 14 ÷ IC 19



DL 26 ÷ DL 30



DL 11 ÷ DL 25

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0004	59.06.5103	.01 U	5%, 63V , PETP	
	C..0005	59.06.5103	.01 U	5%, 63V , PETP	
	C..0009	59.22.3221	220 U	-20%, 10V , EL	
	C..0010	59.06.0104	.1 U	10%, 63V , PETP	
	C..0011	59.22.3221	220 U	-20%, 10V , EL	
(00)	DL.0011	50.04.2114		MV 5152	GI
(01)	DL.0011	50.04.2500		MV 5352	GI
(00)	DL.0012	50.04.2114		MV 5152	GI
(01)	DL.0012	50.04.2500		MV 5352	GI
(00)	DL.0013	50.04.2114		MV 5152	GI
(01)	DL.0013	50.04.2500		MV 5352	GI
(00)	DL.0014	50.04.2114		MV 5152	GI
(01)	DL.0014	50.04.2500		MV 5352	GI
(00)	DL.0015	50.04.2114		MV 5152	GI
(01)	DL.0015	50.04.2500		MV 5352	GI
(00)	DL.0016	50.04.2114		MV 5152	GI
(01)	DL.0016	50.04.2500		MV 5352	GI
	DL.0017	50.04.2115		MV 5752	GI
(00)	DL.0018	50.04.2114		MV 5152	GI
(01)	DL.0018	50.04.2500		MV 5352	GI
(00)	DL.0019	50.04.2114		MV 5152	GI
(01)	DL.0019	50.04.2500		MV 5352	GI
(00)	DL.0020	50.04.2114		MV 5152	GI
(01)	DL.0020	50.04.2500		MV 5352	GI
	DL.0021	50.04.2115		MV 5752	GI
(00)	DL.0022	50.04.2114		MV 5152	GI
(01)	DL.0022	50.04.2500		MV 5352	GI
(00)	DL.0023	50.04.2114		MV 5152	GI
(01)	DL.0023	50.04.2500		MV 5352	GI
(00)	DL.0024	50.04.2114		MV 5152	GI
(01)	DL.0024	50.04.2500		MV 5352	GI
(00)	DL.0025	50.04.2114		MV 5152	GI
(01)	DL.0025	50.04.2500		MV 5352	GI
(00)	DL.0026	50.04.2114		MV 5152	GI
(01)	DL.0026	50.04.2500		MV 5352	GI
(00)	DL.0027	50.04.2114		MV 5152	GI

S T U D E R (02) 88/02/03 KEYBOARD A 1.777.450.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)	DL.0027	50.04.2500		MV 5352	GI
(00)	DL.0028	50.04.2114		MV 5152	GI
(01)	DL.0028	50.04.2500		MV 5352	GI
(00)	DL.0029	50.04.2114		MV 5152	GI
(01)	DL.0029	50.04.2500		MV 5352	GI
(00)	DL.0030	50.04.2114		MV 5152	GI
(01)	DL.0030	50.04.2500		MV 5352	GI
	P..0001	53.03.0228	60 pcs		St
	P..0002	54.01.0265	8 POL.	CASING	St
	P..0003	54.01.0280	4 POL.	CASING	St
	IC.0010	50.07.0010		MC 14499MC ,A	Mot
	IC.0011	50.07.0010		MC 14499MC ,A	Mot
	IC.0012	50.07.0018		MC 14094 BCP, HEF 4094BP ,A	Mot,Ph
	IC.0013	50.13.0106		SAA 1061 ,A	Ph
	IC.0014	73.01.0150		MAN 3980A	GI
	IC.0015	73.01.0150		MAN 3980A	GI
	IC.0016	73.01.0150		MAN 3980A	GI
	IC.0017	73.01.0150		MAN 3980A	GI
	IC.0018	73.01.0150		MAN 3980A	GI
	IC.0019	73.01.0150		MAN 3980A	GI
	MP.0001	1.777.450.11		KEYBOARD PCB	St
	MP.0002	1.777.450.04	5 pcs		St
	MP.0003	1.777.450.01	3 pcs		St
(02)	MP.0004	1.777.470.04	15 pcs		
	J..0005	54.01.0262	8 POL.	STRIP CIS	AMP
	J..0006	54.01.0262	8 POL.	STRIP CIS	AMP
	Q..0007	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0008	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0009	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0010	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0011	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0012	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT

S T U D E R (02) 88/02/03 KEYBOARD A 1.777.450.00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	Q..0013	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0014	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0015	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0016	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0017	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0018	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0019	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0020	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	R..0042	57.11.4103	10 K	2%, 0207 , MF	
	R..0043	57.11.4820	82	2%, 0207 , MF	
	R..0044	57.11.4820	82	2%, 0207 , MF	
	R..0045	57.11.4820	82	2%, 0207 , MF	
	R..0046	57.11.4820	82	2%, 0207 , MF	
	R..0047	57.11.4820	82	2%, 0207 , MF	
	R..0048	57.11.4820	82	2%, 0207 , MF	
	R..0049	57.11.4820	82	2%, 0207 , MF	
	R..0050	57.11.4820	82	2%, 0207 , MF	
	R..0051	57.11.4820	82	2%, 0207 , MF	
	R..0052	57.11.4820	82	2%, 0207 , MF	
	R..0053	57.11.4820	82	2%, 0207 , MF	
	R..0054	57.11.4820	82	2%, 0207 , MF	
	R..0055	57.11.4820	82	2%, 0207 , MF	
	R..0056	57.11.4820	82	2%, 0207 , MF	
	R..0057	57.11.4820	82	2%, 0207 , MF	
	R..0059	57.11.4153	15 K	2%, 0207 , MF	
	R..0060	57.11.4153	15 K	2%, 0207 , MF	
	R..0061	57.11.4153	15 K	2%, 0207 , MF	
	R..0062	57.11.4153	15 K	2%, 0207 , MF	
	R..0063	57.11.4153	15 K	2%, 0207 , MF	
	R..0064	57.11.4153	15 K	2%, 0207 , MF	
	R..0067	57.11.4103	10 K	2%, 0207 , MF	
	R..0068	57.11.4103	10 K	2%, 0207 , MF	
	R..0069	57.11.4103	10 K	2%, 0207 , MF	
	R..0070	57.11.4103	10 K	2%, 0207 , MF	
	R..0076	57.11.4151	150	2%, 0207 , MF	
	R..0077	57.11.4151	150	2%, 0207 , MF	

S T U D E R (02) 88/02/03 KEYBOARD A 1.777.450.00 PAGE 3

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0078	57.11.4151	150	2%, 0207 , MF	
	R..0079	57.11.4151	150	2%, 0207 , MF	
	R..0080	57.11.4151	150	2%, 0207 , MF	
	R..0081	57.11.4151	150	2%, 0207 , MF	
	R..0082	57.11.4151	150	2%, 0207 , MF	
	R..0083	57.11.4151	150	2%, 0207 , MF	
	R..0084	57.11.4151	150	2%, 0207 , MF	
	R..0085	57.11.4151	150	2%, 0207 , MF	
	R..0086	57.11.4151	150	2%, 0207 , MF	
	R..0087	57.11.4151	150	2%, 0207 , MF	
	R..0088	57.11.4151	150	2%, 0207 , MF	
	R..0089	57.11.4151	150	2%, 0207 , MF	
	R..0090	57.11.4151	150	2%, 0207 , MF	
	R..0091	57.11.4151	150	2%, 0207 , MF	
	R..0092	57.11.4223	22 K	2%, 0207 , MF	
	R..0093	57.11.4223	22 K	2%, 0207 , MF	
	R..0094	57.11.4223	22 K	2%, 0207 , MF	
	R..0095	57.11.4223	22 K	2%, 0207 , MF	
	R..0096	57.11.4223	22 K	2%, 0207 , MF	
	R..0097	57.11.4223	22 K	2%, 0207 , MF	
	RA.0004	1.777.450.02	10 K		St
	RA.0006	1.777.450.03	50 K		St
	RA.0104	1.777.450.02	10 K		St
	RZ.0058	57.88.4103	8÷10K		St
	W..0001	1.777.450.93		WL-KEYBOARD	St
	W..0002	1.777.450.94		KL-KEYBOARD	St

S T U D E R (02) 88/02/03 KEYBOARD A 1.777.450.00 PAGE 4

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.

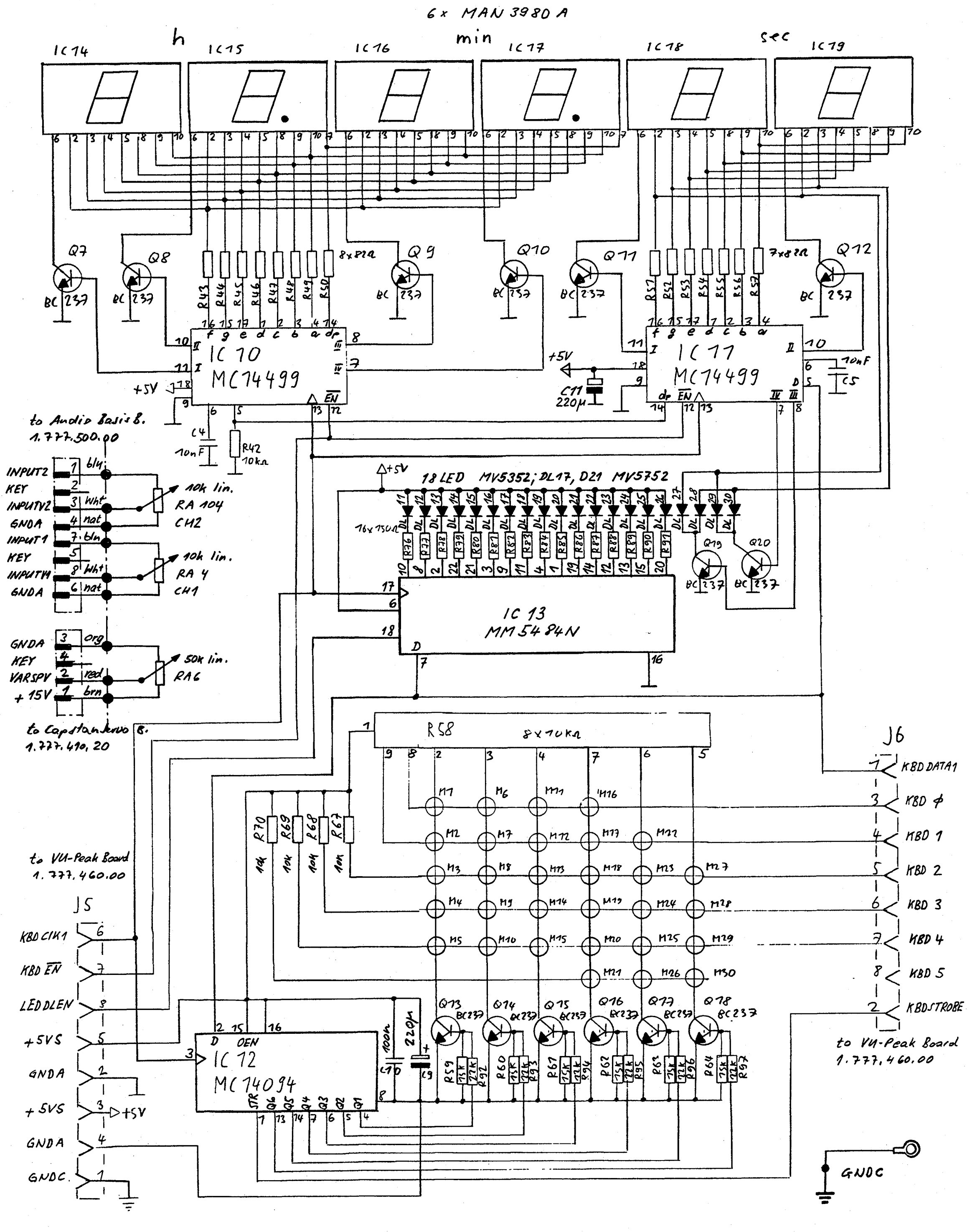
(01) 12.08.87 Value adjust
(02) 03.02.88 MP modification

MANUFACTURER: Mot=Motorola,GI=General Instruments,Ph=Philips
Sie=Siemens,AMP=AMP Incorporated,St=Studer,
TI=Texas Instruments,ITT=Intermetall,
NS=National Semiconductors.

ORIG 86/09/19 (01) 87/08/12 (02) 88/02/03

S T U D E R (02) 88/02/03 KEYBOARD A 1.777.450.00 PAGE 5

KEYBOARD 1.777.451.00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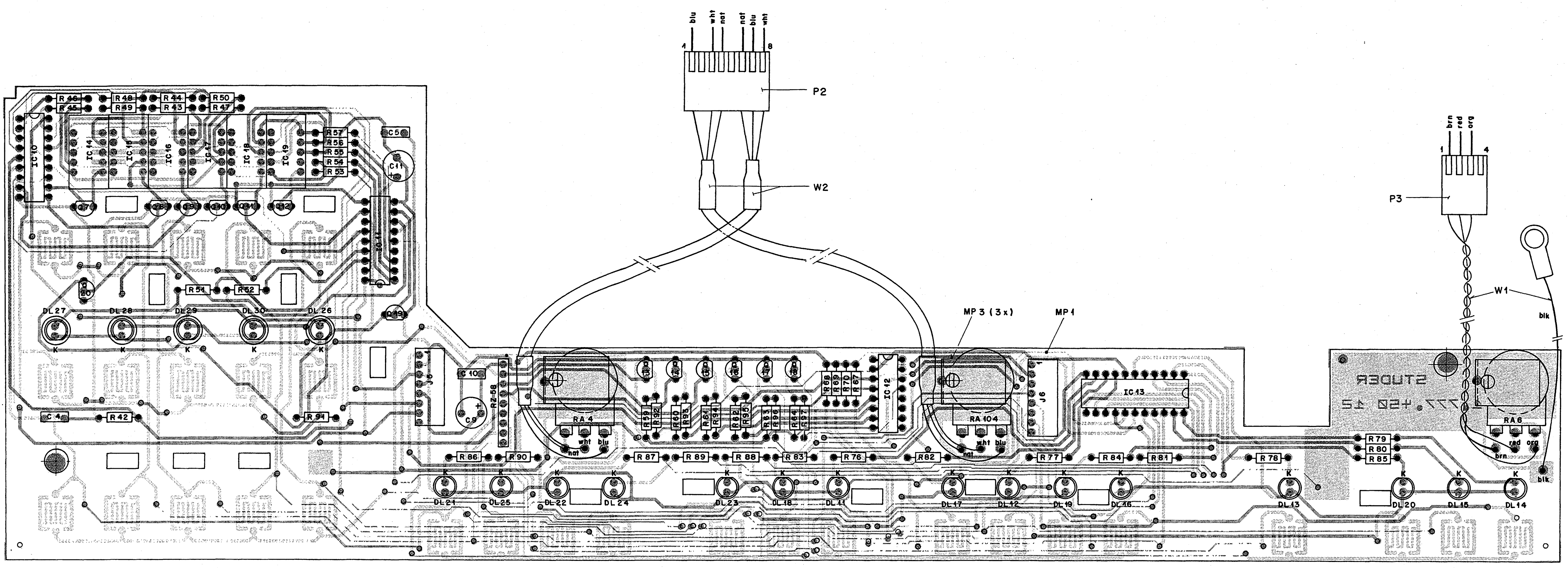
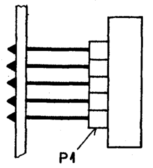
h
min
sec
IC14
IC15
IC16
IC17
IC18
IC19
Q7
Q8
Q9
Q10
Q11
Q12
BC 237
8x82Ω
7x82Ω
R43
R44
R45
R46
R47
R48
R49
R50
R51
R52
R53
R54
R55
R56
R57
IC 10
MC14499
IC 11
MC14499
f g e d c b a dp
EN
+5V
C11
220µ
C4
10nF
R42
10kΩ
10nF
C5
to Audio Basis B.
1.777.500.00
INPUT2
KEY
INPUTV2
GNDA
INPUT1
KEY
INPUTV1
GNDA
blu
wht
nat
10k lin.
RA 104
CH2
10k lin.
RA 4
CH1
GNDA
KEY
VARSPV
+15V
org
red
brn
50k lin.
RA6
to Capstanservo B.
1.777.410.20
+5V
18 LED MV5352; DL17, D21 MV5752
16x750Ω
DL
R76
R77
R78
R79
R80
R81
R82
R83
R84
R85
R86
R87
R88
R89
R90
R91
Q19
Q20
BC 237
IC 13
MM5484N
D
R58
8x10kΩ
J6
KBD DATA1
KBD ϕ
KBD 1
KBD 2
KBD 3
KBD 4
KBD 5
KBDSTROBE
M1 M6 M11 M16
M2 M7 M12 M17 M22
M3 M8 M13 M18 M23 M27
M4 M9 M14 M19 M24 M28
M5 M10 M15 M20 M25 M29
M21 M26 M30
R70
R69
R68
R67
10k
to VU-Peak Board
1.777.460.00
J5
KBD CLK1
KBD EN
LEDDLEN
+5VS
GNDA
+5VS
GNDA
GNDC
+5V
IC 12
MC14094
D
OEN
STR Q6 Q5 Q4 Q3 Q2 Q1
C10
100n
220µ
C9
Q13
Q14
Q15
Q16
Q17
Q18
BC237
R59
R60
R61
R62
R63
R64
15k
22k
R92
R93
R94
R95
R96
R97
to VU-Peak Board
1.777.460.00
GNDC

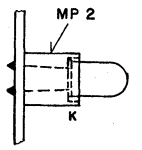
⓪ 4.1.88	○ . .	○ . .	○ . .	○ . .
	C 270			PAGE 1 OF 2
STUDER	KEYBOARD		"ESE" SC	1.777.451.00

KEYBOARD 1.777.451.00

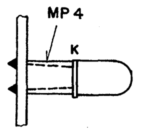




IC 14 ÷ IC 19



DL 26 ÷ DL 30



DL 11 ÷ DL 25

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0004	59.06.5103	.01 U	5%, 63V , PETP	
	C..0005	59.06.5103	.01 U	5%, 63V , PETP	
	C..0009	59.22.3221	220 U	-20%, 10V , EL	
	C..0010	59.06.0104	.1 U	10%, 63V , PETP	
	C..0011	59.22.3221	220 U	-20%, 10V , EL	
(00)	DL.0011	50.04.2114		MV 5152	GI
	DL.0011	50.04.2500		MV 5352	GI
(00)	DL.0012	50.04.2114		MV 5152	GI
	DL.0012	50.04.2500		MV 5352	GI
(00)	DL.0013	50.04.2114		MV 5152	GI
	DL.0013	50.04.2500		MV 5352	GI
(00)	DL.0014	50.04.2114		MV 5152	GI
	DL.0014	50.04.2500		MV 5352	GI
(00)	DL.0015	50.04.2114		MV 5152	GI
	DL.0015	50.04.2500		MV 5352	GI
(00)	DL.0016	50.04.2114		MV 5152	GI
	DL.0016	50.04.2500		MV 5352	GI
	DL.0017	50.04.2115		MV 5752	GI
(00)	DL.0018	50.04.2114		MV 5152	GI
	DL.0018	50.04.2500		MV 5352	GI
(00)	DL.0019	50.04.2114		MV 5152	GI
	DL.0019	50.04.2500		MV 5352	GI
(00)	DL.0020	50.04.2114		MV 5152	GI
	DL.0020	50.04.2500		MV 5352	GI
	DL.0021	50.04.2115		MV 5752	GI
(00)	DL.0022	50.04.2114		MV 5152	GI
	DL.0022	50.04.2500		MV 5352	GI
(00)	DL.0023	50.04.2114		MV 5152	GI
	DL.0023	50.04.2500		MV 5352	GI
(00)	DL.0024	50.04.2114		MV 5152	GI
	DL.0024	50.04.2500		MV 5352	GI
(00)	DL.0025	50.04.2114		MV 5152	GI
	DL.0025	50.04.2500		MV 5352	GI
(00)	DL.0026	50.04.2114		MV 5152	GI
	DL.0026	50.04.2500		MV 5352	GI
(00)	DL.0027	50.04.2114		MV 5152	GI

S T U D E R (00) 88/01/04 KEYBOARD A 1.777.451.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	DL.0027	50.04.2500		MV 5352	GI
(00)	DL.0028	50.04.2114		MV 5152	GI
	DL.0028	50.04.2500		MV 5352	GI
(00)	DL.0029	50.04.2114		MV 5152	GI
	DL.0029	50.04.2500		MV 5352	GI
(00)	DL.0030	50.04.2114		MV 5152	GI
	DL.0030	50.04.2500		MV 5352	GI
	P..0001	53.03.0228	60 pcs		St
	P..0002	54.01.0265	8 POL.	CASING	St
	P..0003	54.01.0280	4 POL.	CASING	St
	IC.0010	50.07.0010		MC 14499MC ,A	Mot
	IC.0011	50.07.0010		MC 14499MC ,A	Mot
	IC.0012	50.07.0018		MC 14094 BCP, HEF 4094BP ,A	Mot,Ph
	IC.0013	50.11.0147		MM 5484 N ,A	NS
	IC.0014	73.01.0150		MAN 3980A	GI
	IC.0015	73.01.0150		MAN 3980A	GI
	IC.0016	73.01.0150		MAN 3980A	GI
	IC.0017	73.01.0150		MAN 3980A	GI
	IC.0018	73.01.0150		MAN 3980A	GI
	IC.0019	73.01.0150		MAN 3980A	GI
	MP.0001	1.777.450.12		KEYBOARD PCB	St
	MP.0002	1.777.450.04	5 pcs		St
	MP.0003	1.777.450.01	3 pcs		St
	MP.0004	1.777.470.04	15 pcs		
	J..0005	54.01.0262	8 POL.	STRIP CIS	AMP
	J..0006	54.01.0262	8 POL.	STRIP CIS	AMP
	Q..0007	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0008	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0009	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0010	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0011	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0012	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT

S T U D E R (00) 88/01/04 KEYBOARD A 1.777.451.00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	Q..0013	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0014	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0015	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0016	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0017	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0018	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0019	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	Q..0020	50.03.0436		BC 547 B,BC 237 B	Sie,TI,ITT
	R..0042	57.11.4103	10 K	2%, 0207 , MF	
	R..0043	57.11.4820	82	2%, 0207 , MF	
	R..0044	57.11.4820	82	2%, 0207 , MF	
	R..0045	57.11.4820	82	2%, 0207 , MF	
	R..0046	57.11.4820	82	2%, 0207 , MF	
	R..0047	57.11.4820	82	2%, 0207 , MF	
	R..0048	57.11.4820	82	2%, 0207 , MF	
	R..0049	57.11.4820	82	2%, 0207 , MF	
	R..0050	57.11.4820	82	2%, 0207 , MF	
	R..0051	57.11.4820	82	2%, 0207 , MF	
	R..0052	57.11.4820	82	2%, 0207 , MF	
	R..0053	57.11.4820	82	2%, 0207 , MF	
	R..0054	57.11.4820	82	2%, 0207 , MF	
	R..0055	57.11.4820	82	2%, 0207 , MF	
	R..0056	57.11.4820	82	2%, 0207 , MF	
	R..0057	57.11.4820	82	2%, 0207 , MF	
	R..0059	57.11.4153	15 K	2%, 0207 , MF	
	R..0060	57.11.4153	15 K	2%, 0207 , MF	
	R..0061	57.11.4153	15 K	2%, 0207 , MF	
	R..0062	57.11.4153	15 K	2%, 0207 , MF	
	R..0063	57.11.4153	15 K	2%, 0207 , MF	
	R..0064	57.11.4153	15 K	2%, 0207 , MF	
	R..0067	57.11.4103	10 K	2%, 0207 , MF	
	R..0068	57.11.4103	10 K	2%, 0207 , MF	
	R..0069	57.11.4103	10 K	2%, 0207 , MF	
	R..0070	57.11.4103	10 K	2%, 0207 , MF	
	R..0076	57.11.4151	150	2%, 0207 , MF	
	R..0077	57.11.4151	150	2%, 0207 , MF	

S T U D E R (00) 88/01/04 KEYBOARD A 1.777.451.00 PAGE 3

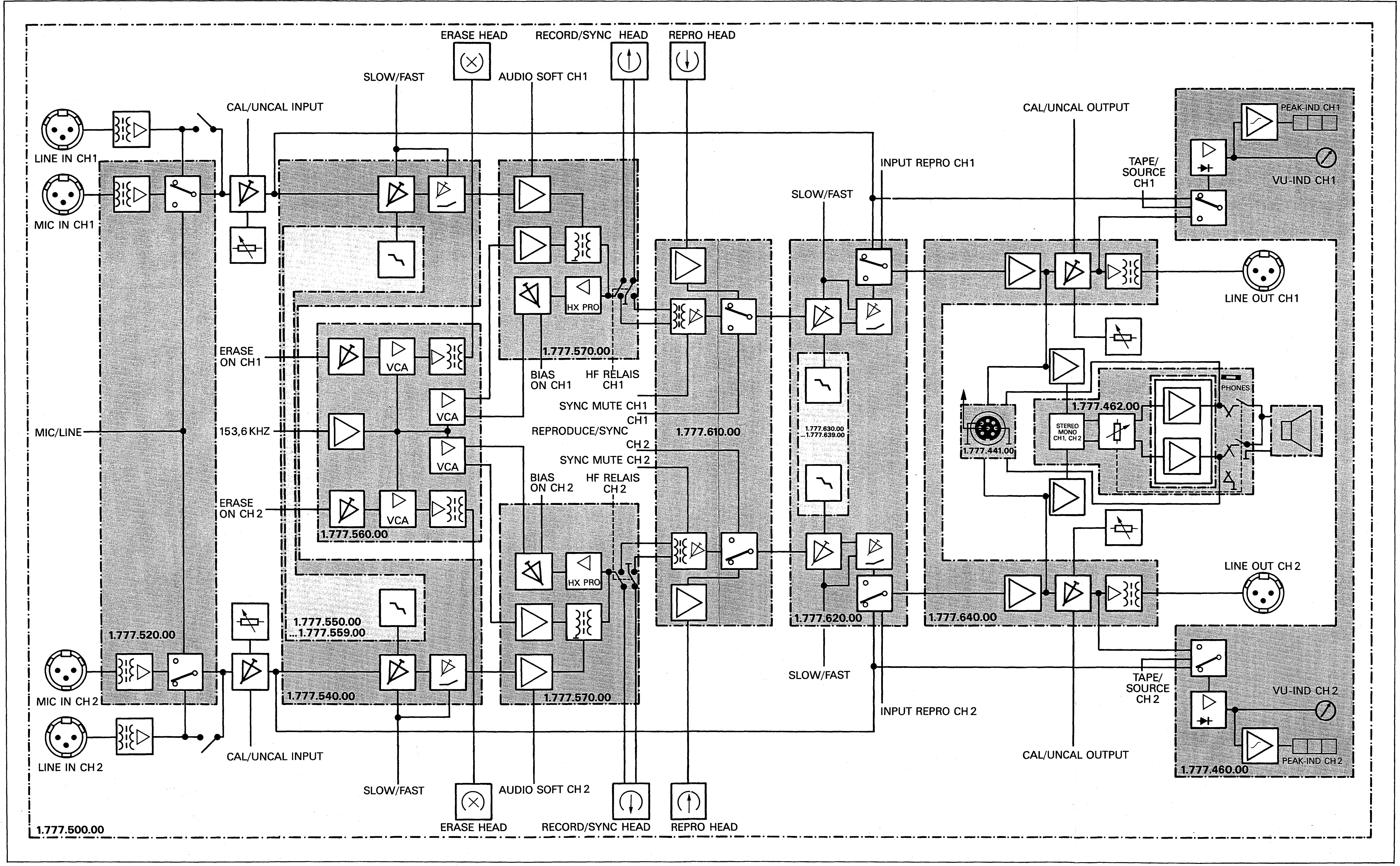
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0078	57.11.4151	150	2%, 0207 , MF	
	R..0079	57.11.4151	150	2%, 0207 , MF	
	R..0080	57.11.4151	150	2%, 0207 , MF	
	R..0081	57.11.4151	150	2%, 0207 , MF	
	R..0082	57.11.4151	150	2%, 0207 , MF	
	R..0083	57.11.4151	150	2%, 0207 , MF	
	R..0084	57.11.4151	150	2%, 0207 , MF	
	R..0085	57.11.4151	150	2%, 0207 , MF	
	R..0086	57.11.4151	150	2%, 0207 , MF	
	R..0087	57.11.4151	150	2%, 0207 , MF	
	R..0088	57.11.4151	150	2%, 0207 , MF	
	R..0089	57.11.4151	150	2%, 0207 , MF	
	R..0090	57.11.4151	150	2%, 0207 , MF	
	R..0091	57.11.4151	150	2%, 0207 , MF	
	R..0092	57.11.4223	22 K	2%, 0207 , MF	
	R..0093	57.11.4223	22 K	2%, 0207 , MF	
	R..0094	57.11.4223	22 K	2%, 0207 , MF	
	R..0095	57.11.4223	22 K	2%, 0207 , MF	
	R..0096	57.11.4223	22 K	2%, 0207 , MF	
	R..0097	57.11.4223	22 K	2%, 0207 , MF	
	RA.0004	1.777.450.02	10 K		St
	RA.0006	1.777.450.03	50 K		St
	RA.0104	1.777.450.02	10 K		St
	RZ.0058	57.88.4103	8÷10K		St
	W..0001	1.777.450.93		WL-KEYBOARD	St
	W..0002	1.777.450.94		KL-KEYBOARD	St

MANUFACTURER: Mot=Motorola,GI=General Instruments,Ph=Philips
Sie=Siemens,AMP=AMP Incorporated,St=Studer,
TI=Texas Instruments,ITT=Intermetall,
NS=National Semiconductors.

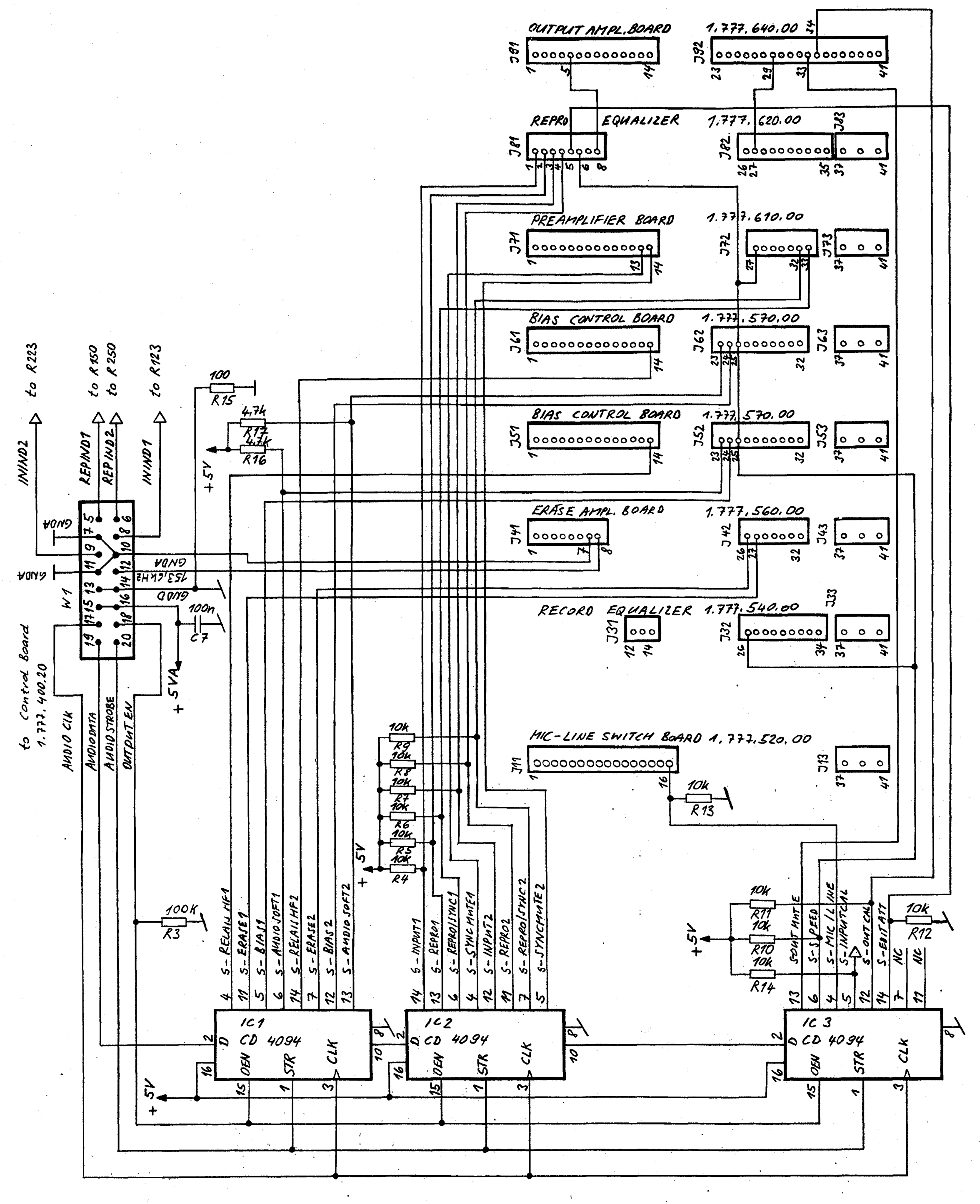
ORIG 88/01/04

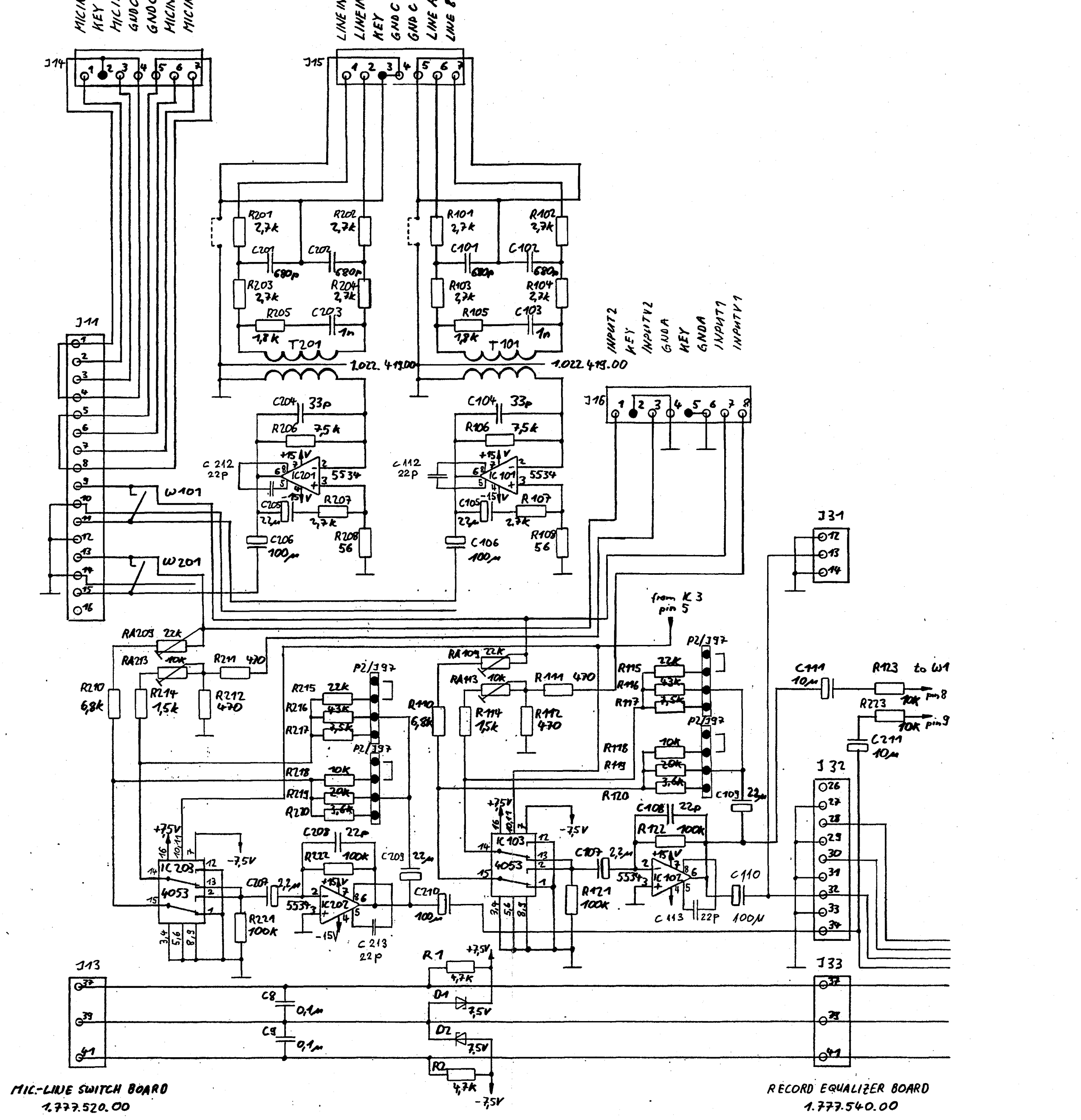
S T U D E R (00) 88/01/04 KEYBOARD A 1.777.451.00 PAGE 4

AUDIO BLOCK DIAGRAM


ERASE HEAD
RECORD/SYNC HEAD
REPRO HEAD
SLOW/FAST
AUDIO SOFT CH1
CAL/UNCAL INPUT
LINE IN CH1
MIC IN CH1
INPUT REPRO CH1
SLOW/FAST
CAL/UNCAL OUTPUT
TAPE/ SOURCE CH1
PEAK-IND CH1
VU-IND CH1
LINE OUT CH1
HX PRO
1.777.570.00
ERASE ON CH1
VCA
BIAS ON CH1
HF RELAIS CH1
SYNC MUTE CH1
CH1
REPRODUCE/SYNC
CH2
SYNC MUTE CH2
MIC/LINE
153,6 KHZ
1.777.610.00
1.777.630.00 ...1.777.639.00
1.777.462.00
PHONES
STEREO MONO CH1, CH2
1.777.441.00
BIAS ON CH2
HF RELAIS CH2
ERASE ON CH2
1.777.560.00
HX PRO
1.777.550.00 ...1.777.559.00
1.777.520.00
1.777.620.00
1.777.640.00
LINE OUT CH2
MIC IN CH2
1.777.540.00
1.777.570.00
SLOW/FAST
INPUT REPRO CH2
TAPE/ SOURCE CH2
VU-IND CH2
LINE IN CH2
CAL/UNCAL INPUT
CAL/UNCAL OUTPUT
PEAK-IND CH2
1.777.460.00
SLOW/FAST
AUDIO SOFT CH2
ERASE HEAD
RECORD/SYNC HEAD
REPRO HEAD
1.777.500.00

AUDIO BASIS BOARD 1.777.500.81


OUTPUT AMPL. BOARD 1.777.640.00
J81
J82
REPRO EQUALIZER 1.777.620.00
J21
J22
J23
PREAMPLIFIER BOARD 1.777.610.00
J71
J72
J73
BIAS CONTROL BOARD 1.777.570.00
J61
J62
J63
BIAS CONTROL BOARD 1.777.570.00
J51
J52
J53
ERASE AMPL. BOARD 1.777.560.00
J41
J42
J43
RECORD EQUALIZER 1.777.540.00
J31
J32
J33
MIC-LINE SWITCH BOARD 1.777.520.00
J11
J13
IC1 CD 4094
IC2 CD 4094
IC3 CD 4094
W1
to Control Board 1.777.400.20
AUDIO CLK
AUDIO DATA
AUDIO STROBE
OUTPUT EN
ININD2
REPIND1
REPIND2
ININD1
to R223
to R150
to R250
to R123
GNDA
+5V
+5VA
R15 100
R17 4,7k
R16 4,7k
C7 100n
R3 100K
R13 10k
R12 10k
S-RELAIS MIC1
S-ERASE1
S-BIAS1
S-AUDIO SOFT1
S-RELAIS MIC2
S-ERASE2
S-BIAS2
S-AUDIO SOFT2
S-INPUT1
S-REPRO1
S-SYNC MUTE1
S-INPUT2
S-REPRO2
S-SYNC MUTE2
SOFT MUTE
S-REPRO
S-MIC/LINE
S-INPUT CAL
S-OUTCAL
S-EDIT ATT
NC


J14
MIC IN A1
KEY
MIC IN B1
GND C
GND C
MIC IN A2
MIC IN B2
J15
LINE IN A2
LINE IN B2
KEY
GND C
GND C
LINE A1
LINE B1
J16
INPUT 2
KEY
INPUT V2
GND A
KEY
GND A
INPUT 1
INPUT V1
J11
T201 1.022.419.00
T101 1.022.419.00
IC201 5534
IC101 5534
IC203 4053
IC202 5534
IC103 4053
IC102 5534
W101
W201
from K3 pin 5
R123 to W1
J31
J32
J33
J13
+7,5V
-7,5V
+15V
-15V
MIC-LINE SWITCH BOARD 1.777.520.00
RECORD EQUALIZER BOARD 1.777.540.00

⓪ 7.1.88 3 JuEn	○ . .	○ . .	○ . .	○ . .
	C270			PAGE 1 OF 4
STUDER	AUDIO BASIS BOARD	"ESE"	SC	1.777.500.81

⓪ 7.1.88 3 JuEn	○ . .	○ . .	○ . .	○ . .
	C270			PAGE 2 OF 4
STUDER	AUDIO BASIS BOARD	"ESE"	SC	1.777.500.81

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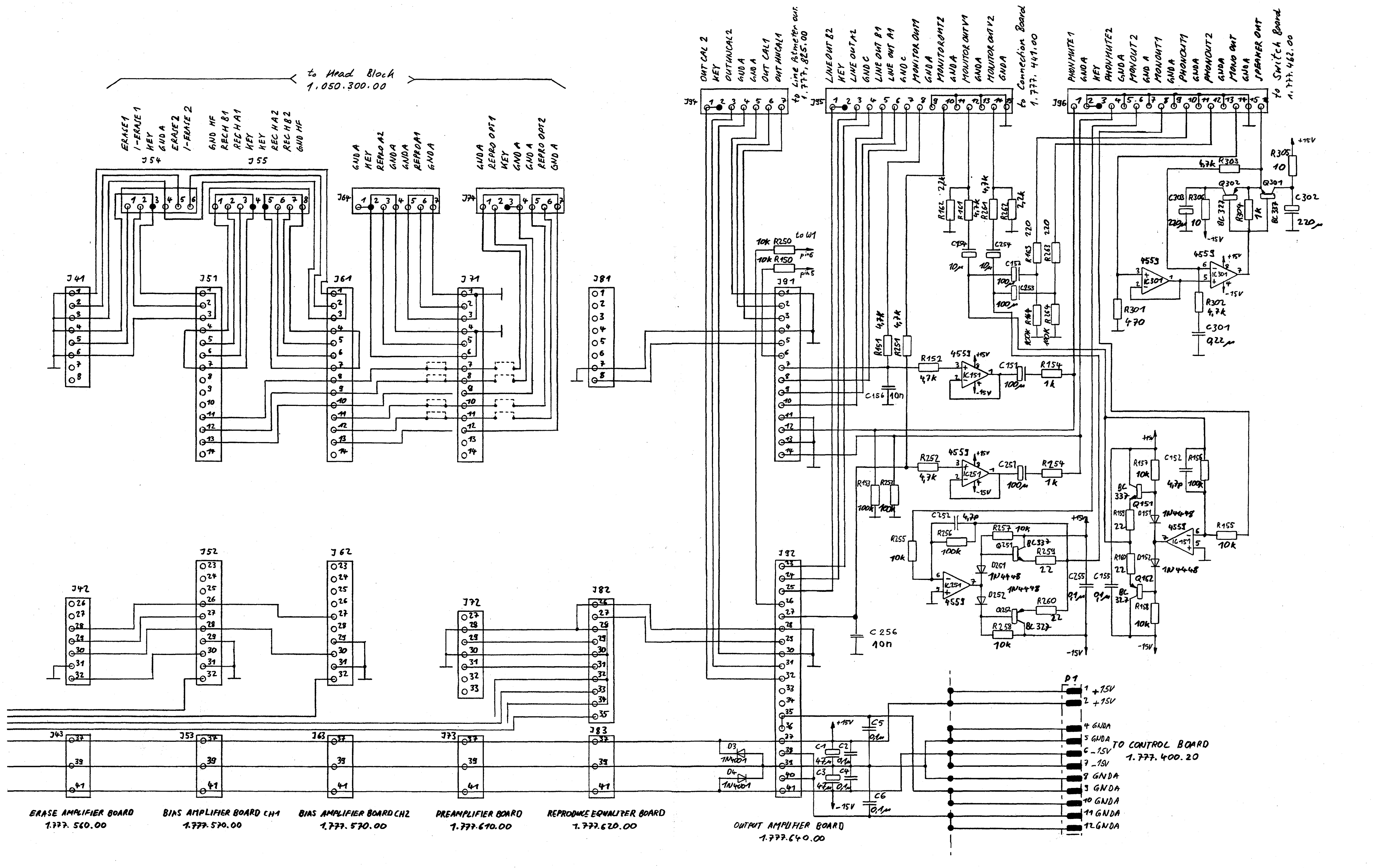
to Head Block 1.050.300.00
J54
J55
J64
J74
J41
J51
J61
J71
J81
J91
J42
J52
J62
J72
J82
J92
J43
J53
J63
J73
J83
J94
J95
J96
OUT CAL 2
KEY
OUT MCAL 2
GND A
GND A
OUT CAL 1
OUT MCAL 1
to Line Attmeter out 1.777.885.00
LINE OUT B2
KEY
LINE OUT A2
GND C
LINE OUT B1
LINE OUT A1
GND C
MONITOR OUT 1
GND A
MONITOR OUT 2
GND A
MONITOR OUT V1
GND A
MONITOR OUT V2
GND A
to Connection Board 1.777.441.00
PHONMUTE 1
GND A
KEY
PHONMUTE 2
GND A
MONOUT 2
GND A
MONOUT 1
GND A
PHONOUT 1
GND A
PHONOUT 2
GND A
MONO OUT
GND A
SPEAKER OUT
to Switch Board 1.777.462.00
ERASE 1
I-ERASE 1
KEY
GND A
ERASE 2
I-ERASE 2
GND HF
REC H B1
REC H A1
KEY
REC H A2
REC H B2
GND HF
GND A
KEY
REPRO A2
GND A
GND A
REPRO A1
GND A
GND A
REPRO OPT 1
KEY
GND A
REPRO OPT 2
GND A
R250 10k
R150 10k
to W1
pin 6
pin 5
R151 4,7k
R251 4,7k
R152 4,7k
IC151 4553
C151 100µ
R154 1k
C156 10n
R252 4,7k
IC251 4553
C251 100µ
R254 1k
R153 100k
R253 100k
R255 10k
R256 100k
C252 4,7p
R257 10k
Q251 BC337
R259 22
D251 1N4448
D252 1N4448
Q252 BC327
R260 22
R258 10k
IC254 4553
C255 0,1µ
C155 0,1µ
C256 10n
R161 2,2k
R162 2,2k
R261 4,7k
R262 4,7k
C154 10µ
C254 10µ
R163 220
R263 220
C153 100µ
C253 100µ
R164 100k
R264 100k
R303 4,7k
Q302
Q301 BC337
C303 220µ
R306
R304 1k
BC327
R305 10
C302 220µ
IC301 4553
R301 470
R302 4,7k
C301 0,22µ
R157 10k
C152 4,7p
R156 100k
Q151 BC337
R159 22
D151 1N4448
IC157 4553
R155 10k
R160 22
D152 1N4448
Q152 BC327
R158 10k
+15V
-15V
D3 1N4001
D4 1N4001
C1 47µ
C2 0,1µ
C3 47µ
C4 0,1µ
C5 0,1µ
C6 0,1µ
P1
1 +15V
2 +15V
4 GNDA
5 GNDA
6 -15V
7 -15V
8 GNDA
9 GNDA
10 GNDA
11 GNDA
12 GNDA
TO CONTROL BOARD 1.777.400.20
ERASE AMPLIFIER BOARD 1.777.560.00
BIAS AMPLIFIER BOARD CH1 1.777.570.00
BIAS AMPLIFIER BOARD CH2 1.777.570.00
PREAMPLIFIER BOARD 1.777.610.00
REPRODUCE EQUALIZER BOARD 1.777.620.00
OUTPUT AMPLIFIER BOARD 1.777.640.00

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			C270			PAGE 3 OF 4
STUDER			AUDIO BASIS BOARD	"ESE"	SC	1.777.500.81

⓪ 7.1.88			○ . .	○ . .	○ . .	○ . .
			C270			PAGE 4 OF 4
STUDER			AUDIO BASIS BOARD	"ESE"	SC	1.777.500.81

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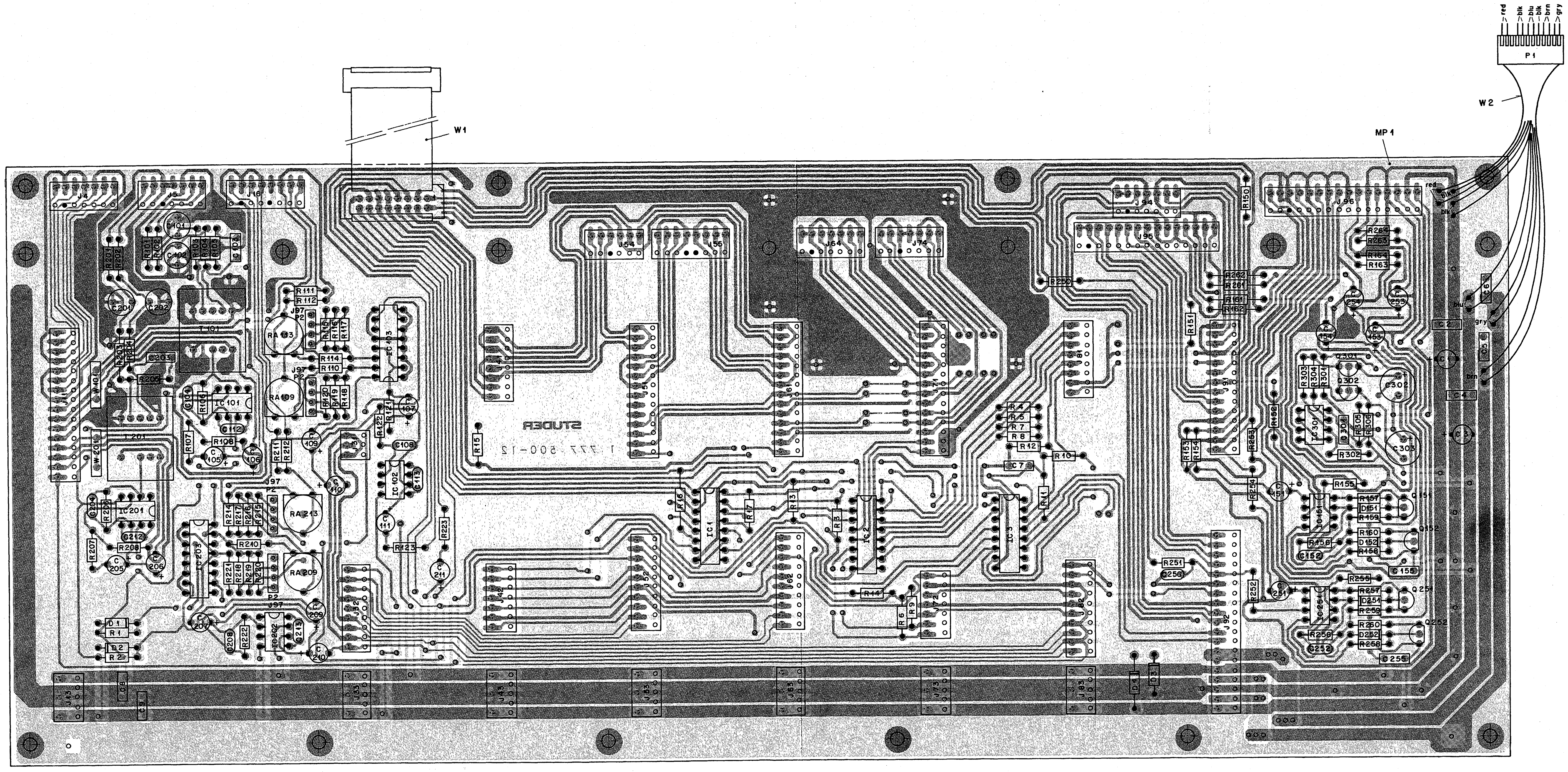
red
blk
blu
blk
brn
gry
P1
W2
MP1
W1
J4
J5
J16
J54
J56
J64
J74
J94
J96
STUDER
1.777.500-12
IC1
IC2
IC3
IC101
IC102
IC103
IC151
IC201
IC202
IC203
IC251
IC301
T101
T201
RA109
RA113
RA209
RA213

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AUDIO BASIS BOARD 1.777.500.81

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.22.5470	47 U	-20%, 25V , EL	
	C..0002	59.06.0104	.1 U	10%, 63V , PETP	
	C..0003	59.22.5470	47 U	-20%, 25V , EL	
	C..0004	59.06.0104	.1 U	10%, 63V , PETP	
	C..0005	59.06.0104	.1 U	10%, 63V , PETP	
	C..0006	59.06.0104	.1 U	10%, 63V , PETP	
	C..0007	59.06.0104	.1 U	10%, 63V , PETP	
	C..0008	59.06.0104	.1 U	10%, 63V , PETP	
	C..0009	59.06.0104	.1 U	10%, 63V , PETP	
	C..0101	59.05.1681	680 P	1%, 630V , PP	
	C..0102	59.05.1681	680 P	1%, 630V , PP	
	C..0103	59.06.5102	1000 P	5%, 63V , PETP	
	C..0104	59.34.2330	33 P	5%, N150 , CER	
	C..0105	59.22.5220	22 U	-20%, 25V , EL	
	C..0106	59.22.4101	100 U	-20%, 16V , EL	
	C..0107	59.22.8229	2.2 U	-20%, 63V , EL	
	C..0108	59.34.2220	22 P	5%, N150 , CER	
	C..0109	59.22.5220	22 U	-20%, 25V , EL	
	C..0110	59.22.4101	100 U	-20%, 16V , EL	
	C..0111	59.22.6100	10 U	-20%, 40V , EL	
	C..0112	59.34.2220	22 P	5%, N150 , CER	
	C..0113	59.34.2220	22 P	5%, N150 , CER	
	C..0151	59.22.4101	100 U	-20%, 16V , EL	
	C..0152	59.34.0479	4.7 P	5%, P100 , CER	
	C..0153	59.22.4101	100 U	-20%, 16V , EL	
	C..0154	59.22.6100	10 U	-20%, 40V , EL	
	C..0155	59.06.0104	.1 U	10%, 63V , PETP	
	C..0156	59.06.0103	.01 U	10%, 63V , PETP	
	C..0201	59.05.1681	680 P	1%, 630V , PP	
	C..0202	59.05.1581	680 P	1%, 630V , PP	
	C..0203	59.06.5102	1000 P	5%, 63V , PETP	
	C..0204	59.34.2330	33 P	5%, N150 , CER	
	C..0205	59.22.5220	22 U	-20%, 25V , EL	
	C..0206	59.22.4101	100 U	-20%, 16V , EL	
	C..0207	59.22.8229	2.2 U	-20%, 63V , EL	
	C..0208	59.34.2220	22 P	5%, N150 , CER	
	C..0209	59.22.5220	22 U	-20%, 25V , EL	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0210	59.22.4101	100 U	-20%, 16V , EL	
	C..0211	59.22.6100	10 U	-20%, 40V , EL	
	C..0212	59.34.2220	22 P	5%, N150 , CER	
	C..0213	59.34.2220	22 P	5%, N150 , CER	
	C..0251	59.22.4101	100 U	-20%, 16V , EL	
	C..0252	59.34.0479	4.7 P	5%, P100 , CER	
	C..0253	59.22.4101	100 U	-20%, 16V , EL	
	C..0254	59.22.6100	10 U	-20%, 40V , EL	
	C..0255	59.06.0104	.1 U	10%, 63V , PETP	
	C..0256	59.06.0103	.01 U	10%, 63V , PETP	
	C..0301	59.06.0224	.22 U	10%, 63V , PETP	
	C..0302	59.22.5221	220 U	-20%, 25V , EL	
	C..0303	59.22.5221	220 U	-20%, 25V , EL	
	D..0001	50.04.1103	7.5 V	5%, .40W , Z	ITT,Mot,Ph
	D..0002	50.04.1103	7.5 V	5%, .40W , Z	
	D..0003	50.04.0122		1N 4001 SI	GI
	D..0004	50.04.0122		1N 4001 SI	GI
	D..0151	50.04.0125		1N 4448 SI	
	D..0152	50.04.0125		1N 4448 SI	
	D..0251	50.04.0125		1N 4448 SI	
	D..0252	50.04.0125		1N 4448 SI	
	IC.0001	50.07.0018		MC 14094 BCP, HEF 4094BP,A	Mot,Ph
	IC.0002	50.07.0018		MC 14094 BCP, HEF 4094BP,A	
	IC.0003	50.07.0018		MC 14094 BCP, HEF 4094BP,A	
	IC.0101	50.05.0243		NE 5534N NE 5534P ,OPAMP	Sig,TI
	IC.0102	50.05.0243		NE 5534N NE 5534P ,OPAMP	Sig,TI
	IC.0103	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	IC.0151	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0201	50.05.0243		NE 5534N NE 5534P ,OPAMP	Sig,TI
	IC.0202	50.05.0243		NE 5534N NE 5534P ,OPAMP	Sig,TI
	IC.0203	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	IC.0251	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0301	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	J..0011	54.01.0294	16 POL.	STRIP CIS	AMP

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	J..0013	54.01.0523	3 POL.	STRIP CIS	
	J..0014	54.01.0218	7 POL.	STRIP CIS	
	J..0015	54.01.0218	7 POL.	STRIP CIS	
	J..0016	54.01.0289	8 POL.	STRIP CIS	
	J..0031	54.01.0287	3 POL.	STRIP CIS	
	J..0032	54.01.0217	9 POL.	STRIP CIS	
	J..0033	54.01.0523	3 POL.	STRIP CIS	
	J..0041	54.01.0289	8 POL.	STRIP CIS	
	J..0042	54.01.0218	7 POL.	STRIP CIS	
	J..0043	54.01.0523	3 POL.	STRIP CIS	
	J..0051	54.01.0293	14 POL.	STRIP CIS	
	J..0052	54.01.0290	10 POL.	STRIP CIS	
	J..0053	54.01.0523	3 POL.	STRIP CIS	
	J..0054	54.01.0216	6 POL.	STRIP CIS	
(00)	J..0055	54.01.0289	8 POL.	STRIP CIS	
	J..0055	54.01.0289	8 POL.	STRIP CIS	
	J..0061	54.01.0293	14 POL.	STRIP CIS	
	J..0062	54.01.0290	10 POL.	STRIP CIS	
	J..0063	54.01.0523	3 POL.	STRIP CIS	
	J..0064	54.01.0218	7 POL.	STRIP CIS	
	J..0071	54.01.0293	14 POL.	STRIP CIS	
	J..0072	54.01.0218	7 POL.	STRIP CIS	
	J..0073	54.01.0523	3 POL.	STRIP CIS	
	J..0074	54.01.0218	7 POL.	STRIP CIS	
	J..0081	54.01.0289	8 POL.	STRIP CIS	
	J..0082	54.01.0290	10 POL.	STRIP CIS	
	J..0083	54.01.0523	3 POL.	STRIP CIS	
	J..0091	54.01.0293	14 POL.	STRIP CIS	
	J..0092	54.01.0297	19 POL.	STRIP CIS	
	J..0094	54.01.0218	7 POL.	STRIP CIS	
	J..0095	54.01.0219	15 POL.	STRIP CIS	
	J..0096	54.01.0294	16 POL.	STRIP CIS	
	J..0097	54.01.0021	4 pcs	JUMPER	Bg
	MP.0001	1.777.500.12		AUDIO-BASIS-PCB	St
	P..0001	54.01.0231	12 POL.	CASING CIS	AMP

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	P..0002	54.01.0020	16 pcs	H=5.8/3.4	Bg
	Q..0151	50.03.0340		BC 337-25	ITT,Ph
	Q..0152	50.03.0351		BC 327-25	Sie,ITT
	Q..0251	50.03.0340		BC 337-25	ITT,Ph
	Q..0252	50.03.0351		BC 327-25	Sie,ITT
	Q..0301	50.03.0340		BC 337-25	ITT,Ph
	Q..0302	50.03.0351		BC 327-25	Sie,ITT
	R..0001	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0002	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0003	57.11.4104	100 K	2%, 0207 , MF	
	R..0004	57.11.4103	10 K	2%, 0207 , MF	
	R..0005	57.11.4103	10 K	2%, 0207 , MF	
	R..0006	57.11.4103	10 K	2%, 0207 , MF	
	R..0007	57.11.4103	10 K	2%, 0207 , MF	
	R..0008	57.11.4103	10 K	2%, 0207 , MF	
	R..0009	57.11.4103	10 K	2%, 0207 , MF	
	R..0010	57.11.4103	10 K	2%, 0207 , MF	
	R..0011	57.11.4103	10 K	2%, 0207 , MF	
	R..0012	57.11.4103	10 K	2%, 0207 , MF	
	R..0013	57.11.4103	10 K	2%, 0207 , MF	
	R..0014	57.11.4103	10 K	2%, 0207 , MF	
	R..0015	57.11.4101	100	2%, 0207 , MF	
	R..0016	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0017	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0101	57.11.3272	2.7 K	1%, 0207 , MF	
	R..0102	57.11.3272	2.7 K	1%, 0207 , MF	
	R..0103	57.11.3272	2.7 K	1%, 0207 , MF	
	R..0104	57.11.3272	2.7 K	1%, 0207 , MF	
	R..0105	57.11.4182	1.8 K	2%, 0207 , MF	
	R..0106	57.11.3752	7.5 K	1%, 0207 , MF	
	R..0107	57.11.3272	2.7 K	1%, 0207 , MF	
	R..0108	57.11.4560	56	2%, 0207 , MF	
	R..0110	57.11.4682	6.8 K	2%, 0207 , MF	
	R..0111	57.11.4471	470	2%, 0207 , MF	
	R..0112	57.11.4471	470	2%, 0207 , MF	
	R..0114	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0115	57.11.4223	22 K	2%, 0207 , MF	
	R..0116	57.11.3433	43 K	1%, 0207 , MF	
	R..0117	57.11.3752	7.5 K	1%, 0207 , MF	
	R..0118	57.11.4103	10 K	2%, 0207 , MF	
	R..0119	57.11.3203	20 K	1%, 0207 , MF	
	R..0120	57.11.3362	3.6 K	1%, 0207 , MF	
	R..0121	57.11.4104	100 K	2%, 0207 , MF	
	R..0122	57.11.4104	100 K	2%, 0207 , MF	
	R..0123	57.11.4103	10 K	2%, 0207 , MF	
	R..0150	57.11.4103	10 K	2%, 0207 , MF	
	R..0151	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0152	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0153	57.11.4104	100 K	2%, 0207 , MF	
	R..0154	57.11.4102	1 K	2%, 0207 , MF	
	R..0155	57.11.4103	10 K	2%, 0207 , MF	
	R..0156	57.11.4104	100 K	2%, 0207 , MF	
	R..0157	57.11.4103	10 K	2%, 0207 , MF	
	R..0158	57.11.4103	10 K	2%, 0207 , MF	
	R..0159	57.11.4220	22	2%, 0207 , MF	
	R..0160	57.11.4220	22	2%, 0207 , MF	
	R..0161	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0162	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0163	57.11.4221	220	2%, 0207 , MF	
	R..0164	57.11.4104	100 K	2%, 0207 , MF	
	R..0201	57.11.3272	2.7 K	1%, 0207 , MF	
	R..0202	57.11.3272	2.7 K	1%, 0207 , MF	
	R..0203	57.11.3272	2.7 K	1%, 0207 , MF	
	R..0204	57.11.3272	2.7 K	1%, 0207 , MF	
	R..0205	57.11.4182	1.8 K	2%, 0207 , MF	
	R..0206	57.11.3752	7.5 K	1%, 0207 , MF	
	R..0207	57.11.3272	2.7 K	1%, 0207 , MF	
	R..0208	57.11.4560	56	2%, 0207 , MF	
	R..0210	57.11.4682	6.8 K	2%, 0207 , MF	
	R..0211	57.11.4471	470	2%, 0207 , MF	
	R..0212	57.11.4471	470	2%, 0207 , MF	
	R..0214	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0215	57.11.4223	22 K	2%, 0207 , MF	
	R..0216	57.11.3433	43 K	1%, 0207 , MF	
	R..0217	57.11.3752	7.5 K	1%, 0207 , MF	
	R..0218	57.11.4103	10 K	2%, 0207 , MF	
	R..0219	57.11.3203	20 K	1%, 0207 , MF	
	R..0220	57.11.3362	3.6 K	1%, 0207 , MF	
	R..0221	57.11.4104	100 K	2%, 0207 , MF	
	R..0222	57.11.4104	100 K	2%, 0207 , MF	
	R..0223	57.11.4103	10 K	2%, 0207 , MF	
	R..0250	57.11.4103	10 K	2%, 0207 , MF	
	R..0251	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0252	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0253	57.11.4104	100 K	2%, 0207 , MF	
	R..0254	57.11.4102	1 K	2%, 0207 , MF	
	R..0255	57.11.4103	10 K	2%, 0207 , MF	
	R..0256	57.11.4104	100 K	2%, 0207 , MF	
	R..0257	57.11.4103	10 K	2%, 0207 , MF	
	R..0258	57.11.4103	10 K	2%, 0207 , MF	
	R..0259	57.11.4220	22	2%, 0207 , MF	
	R..0260	57.11.4220	22	2%, 0207 , MF	
	R..0261	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0262	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0263	57.11.4221	220	2%, 0207 , MF	
	R..0264	57.11.4104	100 K	2%, 0207 , MF	
	R..0301	57.11.4471	470	2%, 0207 , MF	
	R..0302	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0303	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0304	57.11.4102	1 K	2%, 0207 , MF	
	R..0305	57.11.4100	10	2%, 0207 , MF	
	R..0306	57.11.4100	10	2%, 0207 , MF	
	RA.0109	58.02.5223	22 K	20%, .1 W , PCSCH	
	RA.0113	58.02.5103	10 K	20%, .1 W , PCSCH	
	RA.0209	58.02.5223	22 K	20%, .1 W , PCSCH	
	RA.0213	58.02.5103	10 K	20%, .1 W , PCSCH	
	T..0101	1.022.419.00		INPUT TRANSFORMER 1:1	St
	T..0201	1.022.419.00		INPUT TRANSFORMER 1:1	St
	W..0001	1.023.111.01	16 POL.	FLATCABLE AUDIO-BASIS-BOARD	St
	W..0002	1.777.500.93		WL-AUDIO BASIS BOARD	St
	W..0101	55.12.1001		SWITCH C24315-A1347-A124	Sie
	W..0201	55.12.1001		SWITCH C24315-A1347-A124	Sie

MANUFACTURER: AMP=AMP Incorporated,GI=General Instruments,ITT=Intermetall
Mot=Motorola,NS=National Semiconductors,Ph=Philips,Sie=Siemens
Sig=Signetics,St=Studer,Bg=Berg,Ra=Raytheon,NEC=Nippon El.,
TI=Texas Instruments.

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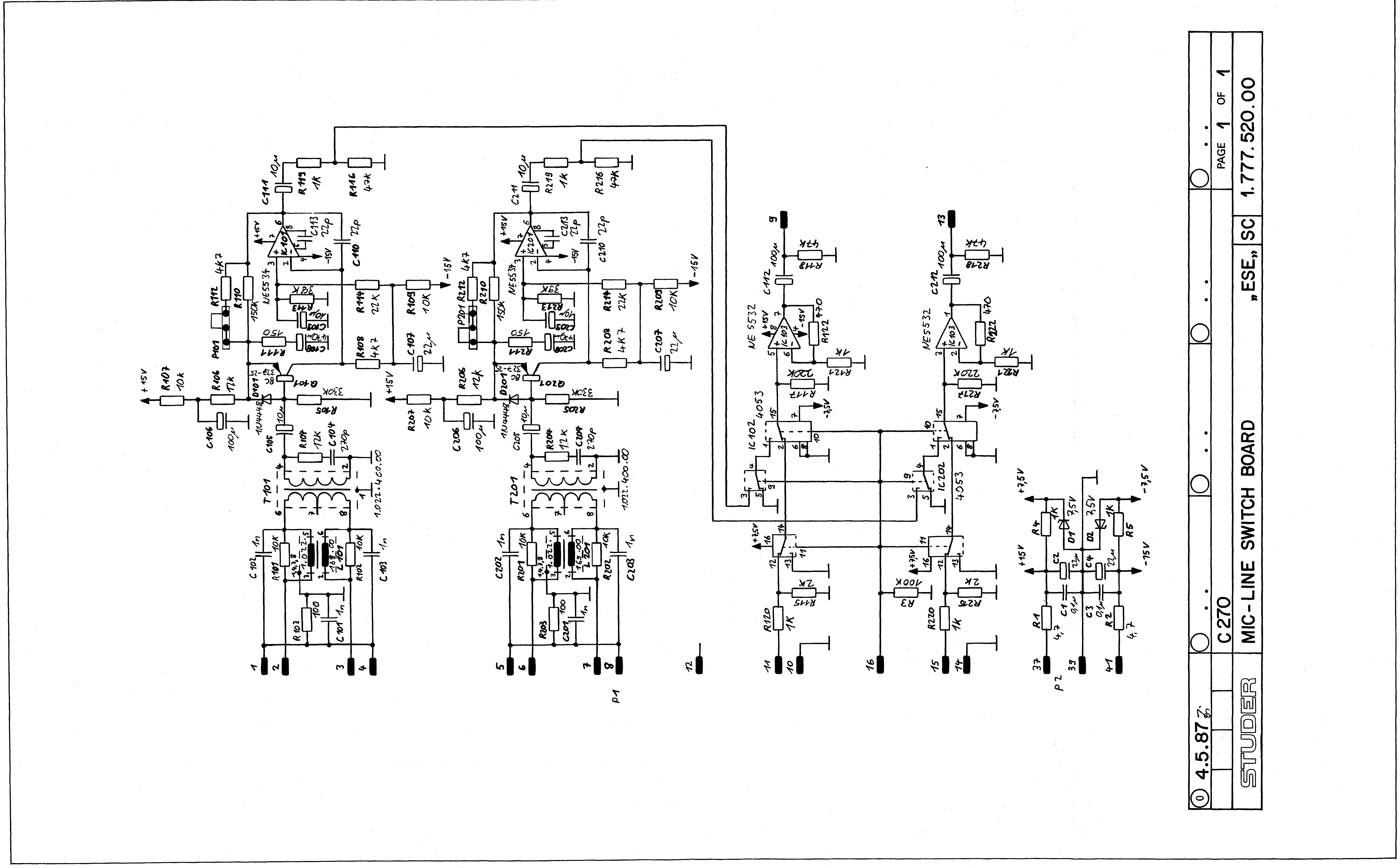
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IC202 4053
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T201 1.022.400.00
L101 1.022.400.00
L201 1.022.400.00
R101 10K
R102 10K
R103 100
R104 12K
R105 330K
R106 12K
R107 10k
R108 4K7
R109 10K
R110 150K
R111 150
R112 4K7
R113 1K
R114 22K
R115 2K
R116 47K
R117 220K
R118 47K
R120 1K
R121 1K
R122 470
R201 10K
R202 10K
R203 100
R204 12K
R205 330K
R206 12K
R207 10K
R208 4K7
R209 10K
R210 150K
R211 150
R212 4K7
R213 1K
R214 22K
R215 2K
R216 47K
R217 220K
R218 47K
R220 1K
R221 1K
R222 470
R1 4,7
R2 4,7
R3 100K
R4 1K
R5 1K
C101 1n
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C104 270p
C105 10µ
C106 100µ
C107 22µ
C108 470µ
C110 22p
C111 10µ
C112 100µ
C113 22p
C201 1n
C202 1n
C203 1n
C204 270p
C205 10µ
C206 100µ
C207 22µ
C208 470µ
C210 22p
C211 10µ
C212 100µ
C213 22p
C1 0,1µ
C2 22µ
C3 0,1µ
C4 22µ
D1 7,5V
D2 7,5V
P101
P201
P1
P2
+15V
-15V
+7,5V
-7,5V
1
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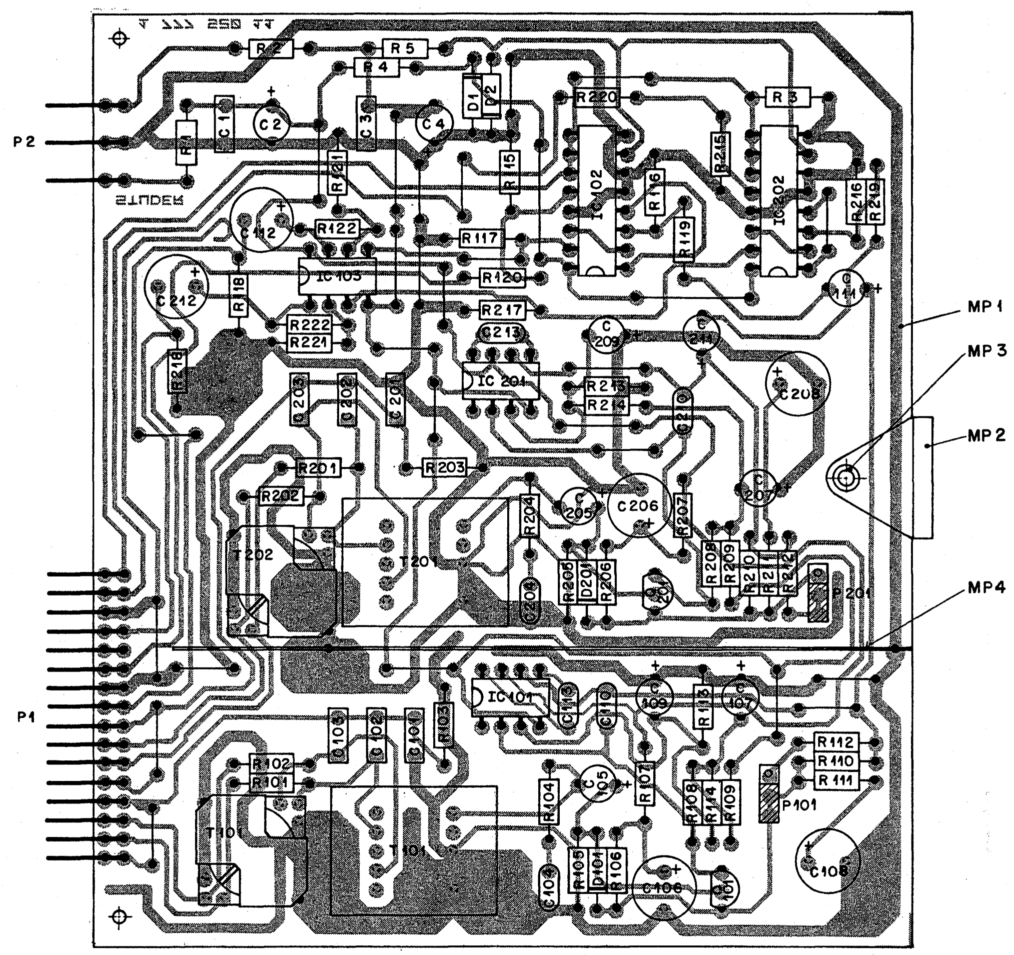
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D2
R220
R 3
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R121
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R215
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C 112
C 212
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IC 105
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C 211
IC 204
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R214
C210
C 208
C203
C202
C201
R201
R202
R203
R204
C 205
C 206
R207
C 207
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C 107
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C102
C101
R103
R102
R101
R112
R110
R 111
R104
C 105
R107
R108
R114
R109
P101
T101
T 102
R105
D101
R106
C104
C106
C 108

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.06.0104	.1 U	10%, 63V , PETP	
	C..0002	59.22.5220	22 U	-20%, 25V , EL	
	C..0003	59.06.0104	.1 U	10%, 63V , PETP	
	C..0004	59.22.5220	22 U	-20%, 25V , EL	
	C..0101	59.06.0102	1000 P	10%, 63V , PETP	
	C..0102	59.06.0102	1000 P	10%, 63V , PETP	
	C..0103	59.06.0102	1000 P	10%, 63V , PETP	
	C..0104	59.34.4271	270 P	5%, N750 , CER	
	C..0105	59.22.6100	10 U	-20%, 35V , EL	
	C..0106	59.22.5101	100 U	-20%, 25V , EL	
	C..0107	59.22.5220	22 U	-20%, 25V , EL	
	C..0108	59.22.2471	470 U	-20%, 6.3V , EL	
	C..0109	59.22.6100	10 U	-20%, 35V , EL	
	C..0110	59.34.2220	22 P	5%, N150 , CER	
	C..0111	59.22.6100	10 U	-20%, 35V , EL	
	C..0112	59.22.5101	100 U	-20%, 25V , EL	
	C..0113	59.34.2220	22 P	5%, N150 , CER	
	C..0201	59.06.0102	1000 P	10%, 63V , PETP	
	C..0202	59.06.0102	1000 P	10%, 63V , PETP	
	C..0203	59.06.0102	1000 P	10%, 63V , PETP	
	C..0204	59.34.4271	270 P	5%, N750 , CER	
	C..0205	59.22.6100	10 U	-20%, 35V , EL	
	C..0206	59.22.5101	100 U	-20%, 25V , EL	
	C..0207	59.22.5220	22 U	-20%, 25V , EL	
	C..0208	59.22.2471	470 U	-20%, 6.3V , EL	
	C..0209	59.22.6100	10 U	-20%, 35V , EL	
	C..0210	59.34.2220	22 P	5%, N150 , CER	
	C..0211	59.22.6100	10 U	-20%, 35V , EL	
	C..0212	59.22.5101	100 U	-20%, 25V , EL	
	C..0213	59.34.2220	22 P	5%, N150 , CER	
	D..0001	50.04.1103	7.5 V	5%, .40W , Z,	
	D..0002	50.04.1103	7.5 V	5%, .40W , Z,	
	D..0101	50.04.0125	1N 4448	SI	
	D..0201	50.04.0125	1N 4448	SI	
	IC.0101	50.05.0243	NE 5534N	NE 5534P ,OPAMP	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	IC.0102	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	
	IC.0103	50.09.0105	NE 5532N	NE 5532P ,OPAMP	
	IC.0201	50.05.0243	NE 5534N	NE 5534P ,OPAMP	
	IC.0202	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	
	J..0101	54.01.0021		JUMPER	
	J..0201	54.01.0021		JUMPER	
	L..0101	1.022.169.00		HF ASYM. COIL	
	L..0201	1.022.169.00		HF ASYM. COIL	
	MP.0001	1.777.520.11		MIC.-LINE SWITCH BOARD	
	MP.0002	1.010.001.33		GRIP	
	MP.0003	28.21.1360	D2.25*5	TUBULARRIVET	
	MP.0004	1.777.520.01		SCREEN-SHEET-METAL	
	P..0001	54.01.0276	16 POL.	STRIP CIS ANGLE	
	P..0002	54.01.0469	3 POL.	STRIP CIS ANGLE	
	P..0101	54.01.0020	3 pcs	PIN H=5.8/3.4 (.63*.63)	
	P..0201	54.01.0020	3 pcs	PIN H=5.8/3.4 (.63*.63)	
	Q..0101	50.03.0351	BC 327-25		
	Q..0201	50.03.0351	BC 327-25		
	R..0001	57.11.4479	4.7	2%, 0207 , MF	
	R..0002	57.11.4479	4.7	2%, 0207 , MF	
	R..0003	57.11.4104	100 K	2%, 0207 , MF	
	R..0004	57.11.4102	1 K	2%, 0207 , MF	
	R..0005	57.11.4102	1 K	2%, 0207 , MF	
	R..0101	57.11.4103	10 K	2%, 0207 , MF	
	R..0102	57.11.4103	10 K	2%, 0207 , MF	
	R..0103	57.11.4101	100	2%, 0207 , MF	
	R..0104	57.11.4123	12 K	2%, 0207 , MF	
	R..0105	57.11.4334	330 K	2%, 0207 , MF	
	R..0106	57.11.4123	12 K	2%, 0207 , MF	
	R..0107	57.11.4103	10 K	2%, 0207 , MF	
	R..0108	57.11.4472	4.7 K	2%, 0207 , MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0109	57.11.4103	10 K	2%, 0207 , MF	
	R..0110	57.11.3114	110 K	1%, 0207 , MF	
	R..0111	57.11.4102	1 K	2%, 0207 , MF	
	R..0112	57.11.3242	2.4 K	1%, 0207 , MF	
	R..0113	57.11.4393	39 K	2%, 0207 , MF	
	R..0114	57.11.4223	22 K	2%, 0207 , MF	
	R..0115	57.11.3202	2 K	1%, 0207 , MF	
	R..0116	57.11.4473	47 K	2%, 0207 , MF	
	R..0117	57.11.4224	220 K	2%, 0207 , MF	
	R..0118	57.11.4473	47 K	2%, 0207 , MF	
	R..0119	57.11.4102	1 K	2%, 0207 , MF	
	R..0120	57.11.4102	1 K	2%, 0207 , MF	
	R..0121	57.11.4102	1 K	2%, 0207 , MF	
	R..0122	57.11.4471	470	2%, 0207 , MF	
	R..0201	57.11.4103	10 K	2%, 0207 , MF	
	R..0202	57.11.4103	10 K	2%, 0207 , MF	
	R..0203	57.11.4101	100	2%, 0207 , MF	
	R..0204	57.11.4123	12 K	2%, 0207 , MF	
	R..0205	57.11.4334	330 K	2%, 0207 , MF	
	R..0206	57.11.4123	12 K	2%, 0207 , MF	
	R..0207	57.11.4103	10 K	2%, 0207 , MF	
	R..0208	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0209	57.11.4103	10 K	2%, 0207 , MF	
	R..0210	57.11.3114	110 K	1%, 0207 , MF	
	R..0211	57.11.4102	1 K	2%, 0207 , MF	
	R..0212	57.11.3242	2.4 K	1%, 0207 , MF	
	R..0213	57.11.4393	39 K	2%, 0207 , MF	
	R..0214	57.11.4223	22 K	2%, 0207 , MF	
	R..0215	57.11.3202	2 K	1%, 0207 , MF	
	R..0216	57.11.4473	47 K	2%, 0207 , MF	
	R..0217	57.11.4224	220 K	2%, 0207 , MF	
	R..0218	57.11.4473	47 K	2%, 0207 , MF	
	R..0219	57.11.4102	1 K	2%, 0207 , MF	
	R..0220	57.11.4102	1 K	2%, 0207 , MF	
	R..0221	57.11.4102	1 K	2%, 0207 , MF	
	R..0222	57.11.4471	470	2%, 0207 , MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	T..0101	1.022.400.00		INPUT TRANSFORMATOR 1:4	
	T..0201	1.022.400.00		INPUT TRANSFORMATOR 1:4	

MANUFACTURER: Mot=Motorola, NS=National Semiconductors, Ph=Philips
Sig=Signetics, St=Studer, TI=Texas Instruments.

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PUBLISHED 01/88

Einbauanleitung für die Mikrofonoption C270

Bausatz: 1 Stk. Mikrofonoption Print 1.777.520.00
2 Stk. Fuehrungsschienen 1.088.300.07

Hilfsmittel: Sechskantschluessel No.2,5
Kreuzschraubendreher No.2

Anleitung:
- Geraet von seiner Stromzufuhr trennen.
- Gehaeuse entfernen durch Loesen der 8 seitlichen IS-Schrauben und der 4 Fussleisten-Befestigungsschrauben.
- Das VU-Meter Panel nach Loesen der 4 IS-Schrauben nach oben klappen.
- Die 2 Drahtbruecken W101 und W201 **(A)** auf dem AUDIO BASIS PRINT oeffnen. Freies Ende nach unten druecken und seitlich aus der Verankerung ausfahren.
- Die 2 Fuehrungsschienen in die vorbereiteten Montageloecher, ganz links, einsetzen und einschnappen lassen.
- Auf Print 1.777.520.00 mit P101 (CH1) und P201 (CH2) **(B)** die Eingangsempfindlichkeit LOW (-70 bis -36 dBU) oder HIGH (-38 bis -8 dBU) waehlen.
- Print 1.777.520.00 in die Steckerleisten J11 und J13 **(C)** des AUDIO BASIS PRINTs 1.777.500.81 einsetzen.
- Auf dem CONTROL PRINT 1.777.400.22 Schalter 6 des DIL-Schalters SZ1 **(D)** auf Position ON stellen (siehe Fig. 2).
- VU-Meter Panel schliessen, Gehaeuse montieren.

Hinweis: Nach diesem Umbau sind keine Einstellarbeiten notwendig.
Fuer die Anwendung bitte Bedienungsanleitung konsultieren.

Installation Instructions for the Mic Option Board C270

Kit: 1 Mic Option Board 1.777.520.00
2 Plastic guide rails 1.088.300.07

Tools: Allen key no.2,5
Cross head screw driver no.2

Instructions:
- Disconnect the unit from its power supply.
- Remove the housing after unscrewing the 8 allen key screws to be found 4 on each side and the units feet by loosening 2 cross head screws each.
- Fold up the VU meter panel after loosening the 4 corresponding allen key screws.
- Disconnect the 2 wire bridges W101 and W201 **(A)** to be found on the AUDIO BASIS BOARD. Push the free end downwards and to the side to loosen it from its contact point.
- Install the two plastic guide rails in their foreseen place (all to the left). Make sure that rails snap in properly.
- Select with P101 (CH1) and P201 (CH2) **(B)** on PCB 1.777.520.00 the wanted input sensitivity, LOW (-70 to -36 dBU) or HIGH (-38 to -8 dBU).
- Insert board 1.777.520.00 into the connectors J11 and J13 **(C)** to be found on the AUDIO BASISD BOARD 1.777.500.81.
- Set switch 6 of the DIL switch SZ1 **(D)** to its ON position, to be found on the CONTROL BOARD 1.777.400.22 (see fig. 2).
- Reinstall VU meter panel and housing.

Attention: After this installation no realignment is needed.
To operate please consult the operating manual.

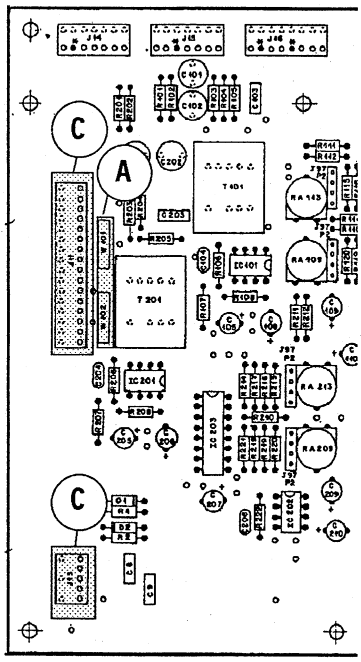
Instruction de montage pour l'option microphone C270.

Contenu: 1 carte option microphone 1.777.520.00
2 glissières de guidage 1.088.300.07

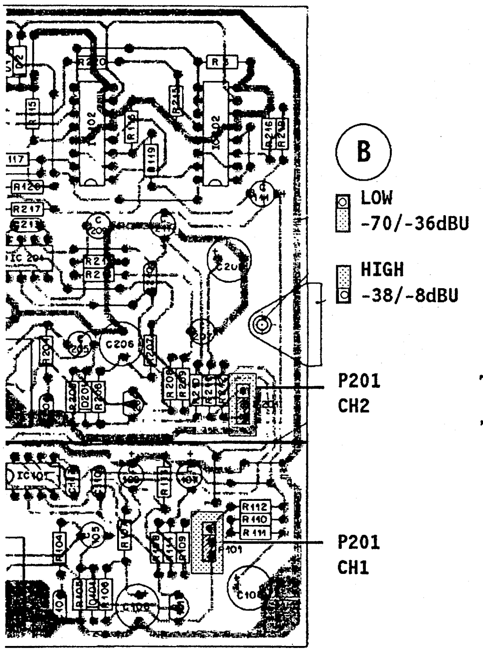
Outillage: clé 6-pans No.2.5
Tourne-vis à croix No.2

Instructions:
- retirer la fiche secteur.
- enlever le boîtier après avoir retiré les 8 vis 6-pans latérales ainsi que les 4 vis des pieds.
- ouvrir vers le haut le panneau des VU-mètres après avoir retiré les 4 vis 6-pans.
- ouvrir les 2 contacts W101 et W201 **(A)** du AUDIO BASIS PRINT: peser sur l'extrêmité libre et dégager le contact sur le côté.
- introduire les 2 glissières dans les trous prévus à cet effet, tout à gauche des cartes audio.
- Sur le circuit 1.777.520.00 choisir la sensibilité d'entrée à l'aide de P101 (CH1) et de P201 (CH2) **(B)**. LOW (-70 à -36 dBU) ou HIGH (-38 à -8 dBU).
- introduire la carte 1.777.520.00 dans les contacts J11 et J13 **(C)** de la carte AUDIO BASIS PRINT 1.777.500.81.
- mettre le 6e contact de l'interrupteur DIL SZ1 **(D)** en position ON, sur la carte CONTROL PRINT 1.777.400.22.
- refermer le panneau VU-mètres et le boîtier.

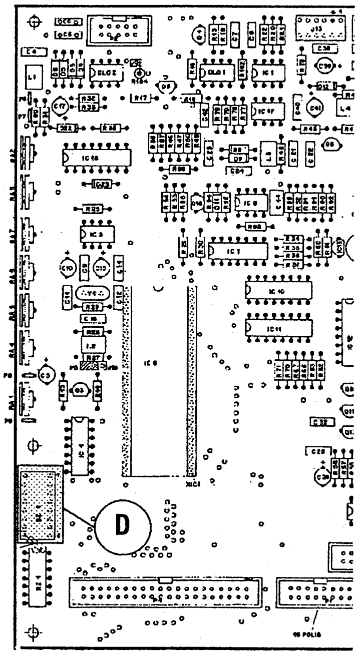
Remarques: - Cette modification ne nécessite pas de réglage de l'appareil. Consulter aussi le mode d'emploi.



1.777.500.81

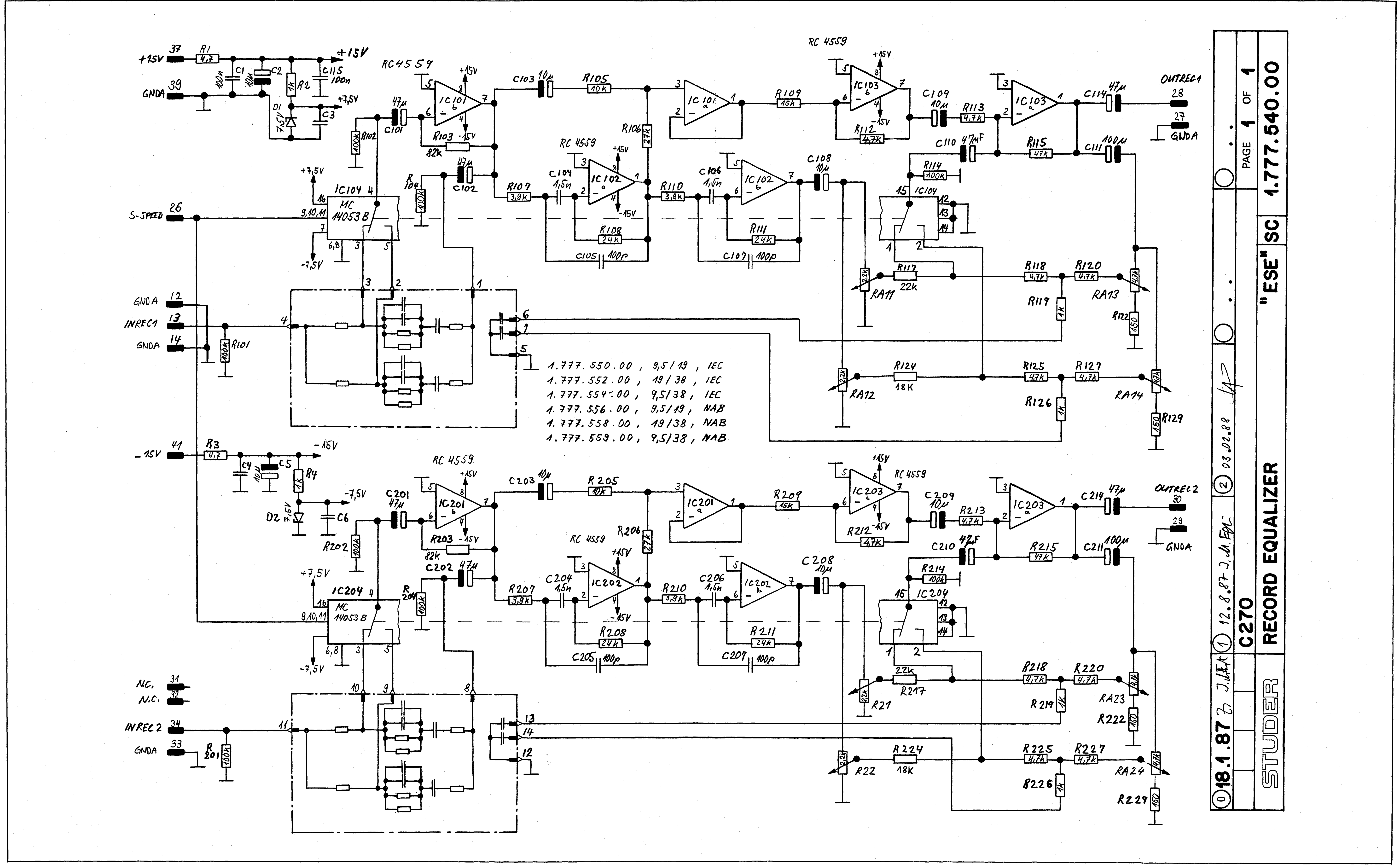


1.777.520.00



1.777.400.22

RECORD EQUALIZER BOARD 1.777.540.00


+15V
GNDA
37
39
R1 4,7
C1 100n
C2 10µ
R2 1k
C115 100n
+15V
+7,5V
D1 7,5V
C3
RC4559
IC101 b
R103 82k -15V
R102 100k
C101 47µ
C103 10µ
R105 10k
R106 27k
IC101 a
R109 15k
RC 4559
IC103 b
R112 4,7k
C109 10µ
R113 4,7k
IC103 a
C114 47µ
OUTREC1
28
27
GNDA
C110 47µF
R115 47k
C111 100µ
R114 100k
IC104
RC 4559
IC102 a
C104 1,5n
R107 3,9k
R108 24k
C105 100p
R110 3,9k
C106 1,5n
IC102 b
R111 24k
C107 100p
C108 10µ
C102 47µ
R104 100k
+7,5V
IC104
MC 14053 B
9,10,11
16
6,8
-7,5V
S-SPEED
26
GNDA 12
INREC1 13
GNDA 14
R101 100k
R117 22k
RA11
R118 4,7k
R120 4,7k
RA13
R119 1k
R122 150
R124 18K
RA12
R125 4,7k
R127 4,7k
RA14
R126 1k
R129 150
1.777.550.00, 9,5/19, IEC
1.777.552.00, 19/38, IEC
1.777.554.00, 9,5/38, IEC
1.777.556.00, 9,5/19, NAB
1.777.558.00, 19/38, NAB
1.777.559.00, 9,5/38, NAB
-15V
41
R3 4,7
C4
C5 10µ
R4 1k
D2 7,5V
C6
-7,5V
RC 4559
IC201 b
C201 47µ
R202 100k
R203 82k -15V
C203 10µ
R205 10k
R206 27k
IC201 a
R209 15k
RC 4559
IC203 b
R212 4,7k
C209 10µ
R213 4,7k
IC203 a
C214 47µ
OUTREC2
30
29
GNDA
C210 47µF
R215 47k
C211 100µ
R214 100k
IC204
RC 4559
IC202 a
C204 1,5n
R207 3,9k
R208 24k
C205 100p
R210 3,9k
C206 1,5n
IC202 b
R211 24k
C207 100p
C208 10µ
C202 47µ
R204 100k
+7,5V
IC204
MC 14053 B
-7,5V
N.C. 31
N.C. 32
INREC2 34
GNDA 33
R201 100k
R217 22k
R21
R218 4,7k
R220 4,7k
RA23
R219 1k
R222 150
R224 18K
R22
R225 4,7k
R227 4,7k
RA24
R226 1k
R229 150
0 18.1.87
1 12.8.87
2 03.02.88
C270
RECORD EQUALIZER
"ESE" SC
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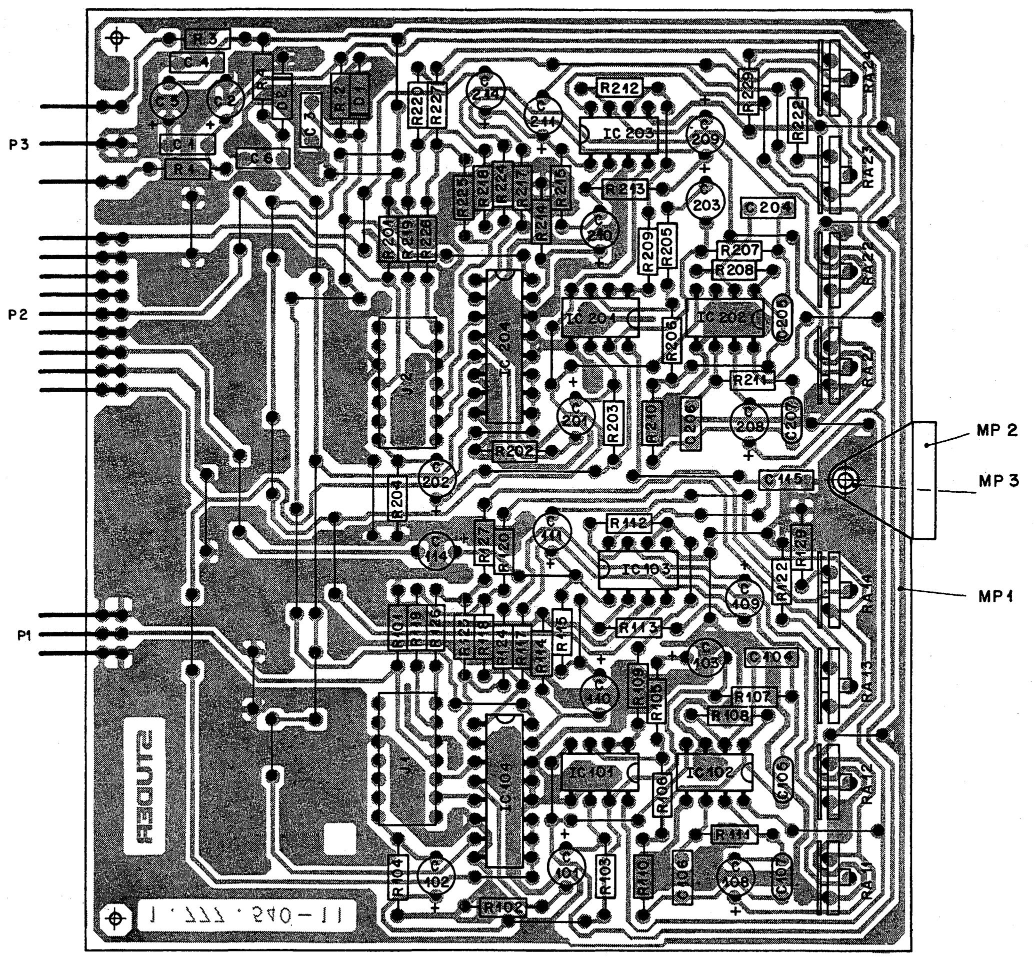
1.777.540.00
STUDER

PUBLISHED 01/88

RECORD EQUALIZER BOARD 1.777.540.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.06.0104	.1 U	10%, 63V , PETP	
	C..0002	59.22.6100	10 U	-20%, 40V , EL	
	C..0003			not connected	
(00)	C..0004	59.06.0104	.1 U	10%, 63V , PETP	
(01)	C..0004			not connected	
	C..0005	59.22.6100	10 U	-20%, 40V , EL	
	C..0006			not connected	
	C..0101	59.22.3470	47 U	-20%, 10V , EL	
	C..0102	59.22.3470	47 U	-20%, 10V , EL	
	C..0103	59.22.6100	10 U	-20%, 40V , EL	
	C..0104	59.06.5152	1500 P	5%, 63V , PETP	
	C..0105	59.34.4101	100 P	5%, N750 , CER	
	C..0106	59.06.5152	1500 P	5%, 63V , PETP	
	C..0107	59.34.4101	100 P	5%, N750 , CER	
	C..0108	59.22.6100	10 U	-20%, 40V , EL	
	C..0109	59.22.6100	10 U	-20%, 40V , EL	
	C..0110	59.22.3470	47 U	-20%, 10V , EL	
	C..0111	59.22.3101	100 U	-20%, 10V , EL	
	C..0114	59.22.3470	47 U	-20%, 10V , EL	
	C..0115	59.06.0104	.1 U	10%, 63V , PETP	
	C..0201	59.22.3470	47 U	-20%, 10V , EL	
	C..0202	59.22.3470	47 U	-20%, 10V , EL	
	C..0203	59.22.6100	10 U	-20%, 40V , EL	
	C..0204	59.06.5152	1500 P	5%, 63V , PETP	
	C..0205	59.34.4101	100 P	5%, N750 , CER	
	C..0206	59.06.5152	1500 P	5%, 63V , PETP	
	C..0207	59.34.4101	100 P	5%, N750 , CER	
	C..0208	59.22.6100	10 U	-20%, 40V , EL	
	C..0209	59.22.6100	10 U	-20%, 40V , EL	
	C..0210	59.22.3470	47 U	-20%, 10V , EL	
	C..0211	59.22.3101	100 U	-20%, 10V , EL	
	C..0214	59.22.3470	47 U	-20%, 10V , EL	
	D..0001	50.04.1103	7.5 V	5%, .40W , Z	ITT,Mot
	D..0002	50.04.1103	7.5 V	5%, .40W , Z	
	IC.0101	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	IC.0102	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0103	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0104	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	IC.0201	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0202	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0203	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0204	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	J..0001	54.01.0244	7 POL.	STRIP CIS PARLEL	AMP
	J..0002	54.01.0244	7 POL.	STRIP CIS PARLEL	
	MP.0001	1.777.540.11		RECORD EQUALIZER PCB	St
	MP.0002	1.010.001.33		GRIP	
	MP.0003	28.21.1360	D2.25÷5	TUBULARRIVET	St
	P..0001	54.01.0227	3 POL.	STRIP CIS ANGLE	AMP
	P..0002	54.01.0220	9 POL.	STRIP CIS ANGLE	
	P..0003	54.01.0469	3 POL.	STRIP CIS ANGLE	
	R..0001	57.11.4479	4.7	2%, 0207 , MF	
	R..0002	57.11.4102	1 K	2%, 0207 , MF	
	R..0003	57.11.4479	4.7	2%, 0207 , MF	
	R..0004	57.11.4102	1 K	2%, 0207 , MF	
	R..0101	57.11.4104	100 K	2%, 0207 , MF	
	R..0102	57.11.4104	100 K	2%, 0207 , MF	
	R..0103	57.11.4823	82 K	2%, 0207 , MF	
	R..0104	57.11.4104	100 K	2%, 0207 , MF	
	R..0105	57.11.4103	10 K	2%, 0207 , MF	
	R..0106	57.11.4273	27 K	2%, 0207 , MF	
	R..0107	57.11.4392	3.9 K	2%, 0207 , MF	
	R..0108	57.11.3243	24 K	1%, 0207 , MF	
	R..0109	57.11.4153	15 K	2%, 0207 , MF	
	R..0110	57.11.4392	3.9 K	2%, 0207 , MF	
	R..0111	57.11.3243	24 K	1%, 0207 , MF	
	R..0112	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0113	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0114	57.11.4104	100 K	2%, 0207 , MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0115	57.11.4473	47 K	2%, 0207 , MF	
	R..0117	57.11.4223	22 K	2%, 0207 , MF	
	R..0118	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0119	57.11.4102	1 K	2%, 0207 , MF	
	R..0120	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0122	57.11.4151	150	2%, 0207 , MF	
(00)	R..0124	57.11.4223	22 K	2%, 0207 , MF	
(02)	R..0124	57.11.4183	18 K	2%, 0207 , MF	
	R..0125	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0126	57.11.4102	1 K	2%, 0207 , MF	
	R..0127	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0129	57.11.4151	150	2%, 0207 , MF	
	R..0201	57.11.4104	100 K	2%, 0207 , MF	
	R..0202	57.11.4104	100 K	2%, 0207 , MF	
	R..0203	57.11.4823	82 K	2%, 0207 , MF	
	R..0204	57.11.4104	100 K	2%, 0207 , MF	
	R..0205	57.11.4103	10 K	2%, 0207 , MF	
	R..0206	57.11.4273	27 K	2%, 0207 , MF	
	R..0207	57.11.4392	3.9 K	2%, 0207 , MF	
	R..0208	57.11.3243	24 K	1%, 0207 , MF	
	R..0209	57.11.4153	15 K	2%, 0207 , MF	
	R..0210	57.11.4392	3.9 K	2%, 0207 , MF	
	R..0211	57.11.3243	24 K	1%, 0207 , MF	
	R..0212	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0213	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0214	57.11.4104	100 K	2%, 0207 , MF	
	R..0215	57.11.4473	47 K	2%, 0207 , MF	
	R..0217	57.11.4223	22 K	2%, 0207 , MF	
	R..0218	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0219	57.11.4102	1 K	2%, 0207 , MF	
	R..0220	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0222	57.11.4151	150	2%, 0207 , MF	
(00)	R..0224	57.11.4223	22 K	2%, 0207 , MF	
(02)	R..0224	57.11.4183	18 K	2%, 0207 , MF	
	R..0225	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0226	57.11.4102	1 K	2%, 0207 , MF	
	R..0227	57.11.4472	4.7 K	2%, 0207 , MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0229	57.11.4151	150	2%, 0207 , MF	
	RA.0011	58.02.4222	2.2 K	20%, .1 W , PCSCH	
	RA.0012	58.02.4222	2.2 K	20%, .1 W , PCSCH	
	RA.0013	58.02.4472	4.7 K	20%, .1 W , PCSCH	
	RA.0014	58.02.4472	4.7 K	20%, .1 W , PCSCH	
	RA.0021	58.02.4222	2.2 K	20%, .1 W , PCSCH	
	RA.0022	58.02.4222	2.2 K	20%, .1 W , PCSCH	
	RA.0023	58.02.4472	4.7 K	20%, .1 W , PCSCH	
	RA.0024	58.02.4472	4.7 K	20%, .1 W , PCSCH	

(01) 12.08.87 Value adjust
(02) 03.02.88 Value adjust

MANUFACTURER: AMP=AMP Incorporated,ITT=Intermetall,Mot=Motorola,
NEC=Nippon Electric Corp.,NS=National Semiconductors,
Ra=Raytheon,St=Studer.

ORIG 86/09/15 (01) 87/08/12 (02) 88/02/03

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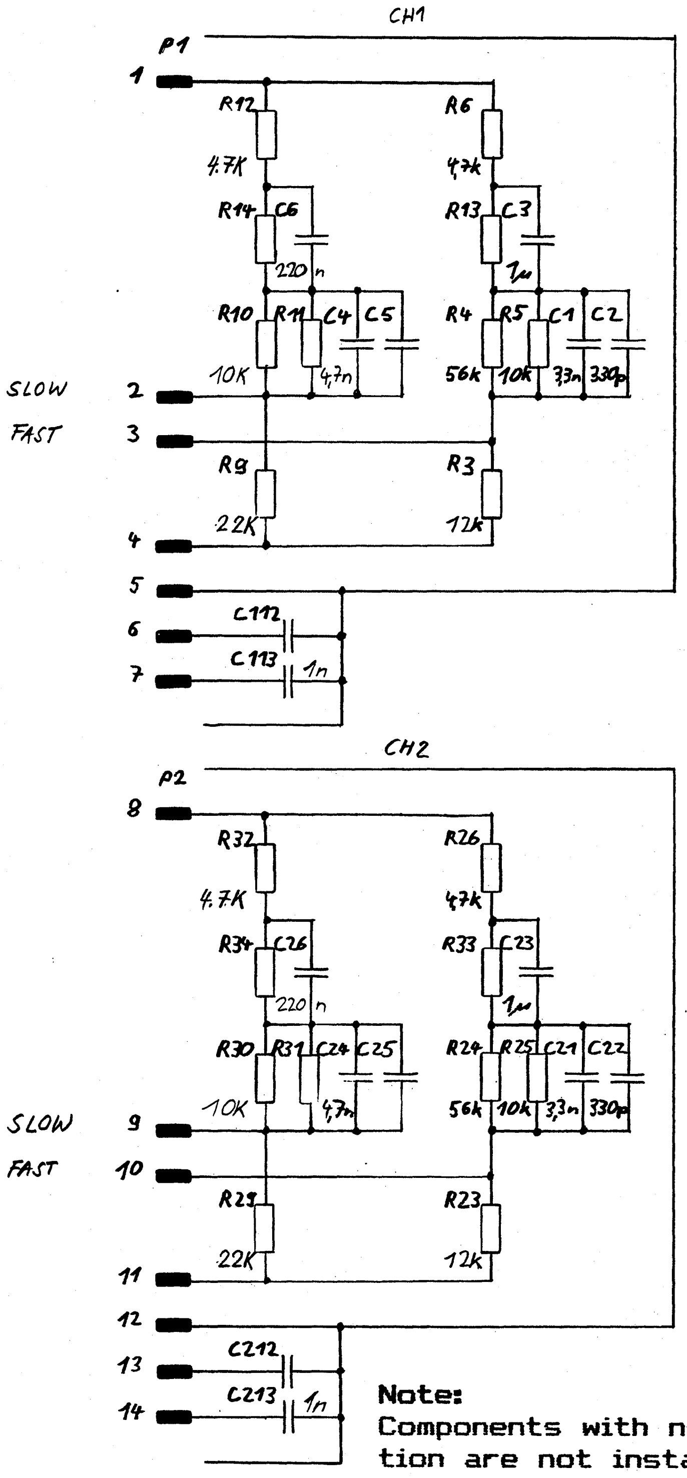
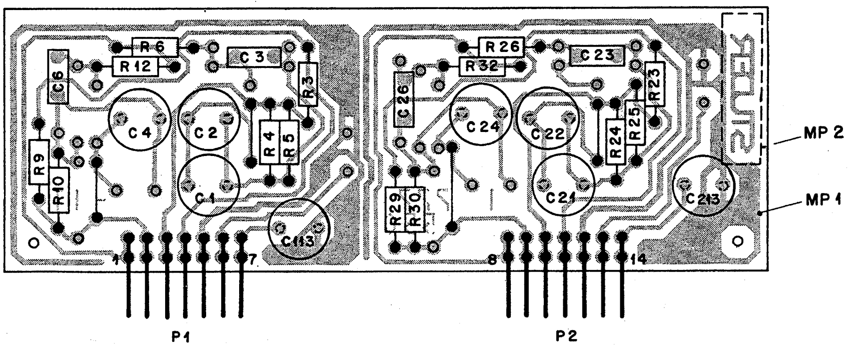
RECORD SPEED BOARD 9.5/19 IEC 1.777.550.00


CH1
P1
1
R12
4.7K
R6
47k
R14
C6
220n
R13
C3
1µ
R10
R11
C4
C5
10K
4,7n
R4
R5
C1
C2
56k
10k
3,3n
330p
SLOW
2
FAST
3
R9
22K
R3
12k
4
5
6
C112
7
C113
1n
CH2
P2
8
R32
4.7K
R26
47k
R34
C26
220n
R33
C23
1µ
R30
R31
C24
C25
10K
4,7n
R24
R25
C21
C22
56k
10k
3,3n
330p
SLOW
9
FAST
10
R29
22K
R23
12k
11
12
13
C212
14
C213
1n

Note:
Components with no value indication are not installed.

⓪23.2.87	① 15.09.87	② 03.02.88	○ . .	○ . .
	C270			PAGE 1 OF 1
STUDER	RECORD SPEED B. 9.5/19 IEC(3,75/7,5)	SC	1.777.550.00	

RECORD SPEED BOARD 9.5/19 IEC 1.777.550.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.05.2332	3300 P	2.5%, 160V , PP	
	C..0002	59.05.2331	330 P	2.5%, 630V , PP	
	C..0003	59.06.5105	1 U	5%, 50V , PETP	
(00)	C..0004	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0004	59.05.2472	4700 P	2.5%, 63V , PP	
(00)	C..0005	59.05.2332	3300 P	2.5%, 160V , PP	
(01)	C..0005			not connected	
(00)	C..0006	59.06.5474	.47 U	5%, 63V , PETP	
(01)	C..0006	59.06.5224	.22 U	5%, 63V , PETP	
	C..0021	59.05.2332	3300 P	2.5%, 160V , PP	
	C..0022	59.05.2331	330 P	2.5%, 630V , PP	
	C..0023	59.06.5105	1 U	5%, 50V , PETP	
(00)	C..0024	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0024	59.05.2472	4700 P	2.5%, 63V , PP	
(00)	C..0025	59.05.2332	3300 P	2.5%, 160V , PP	
(01)	C..0025			not connected	
(00)	C..0026	59.06.5474	.47 U	5%, 63V , PETP	
(01)	C..0026	59.06.5224	.22 U	5%, 63V , PETP	
(01)	C..0113	59.05.2102	1000 P	2,5%, 630V , PP	
(01)	C..0213	59.05.2102	1000 P	2,5%, 630V , PP	
	MP.0001	1.777.550.11		RECORD SPEED BOARD PCB	
	MP.0002	1.777.550.01		LABEL	
	P..0001	54.01.0223	7 POL.	STRIP CIS	
	P..0002	54.01.0223	7 POL.	STRIP CIS	
	R..0003	57.11.3123	12 K	1%, 0207 , MF	
	R..0004	57.11.3563	56 K	1%, 0207 , MF	
	R..0005	57.11.3103	10 K	1%, 0207 , MF	
	R..0006	57.11.3472	4.7 K	1%, 0207 , MF	
(00)	R..0009	57.11.3103	10 K	1%, 0207 , MF	
(01)	R..0009	57.11.3183	18 K	1%, 0207 , MF	
(02)	R..0009	57.11.4223	22 K	2%, 0207 , MF	
(00)	R..0010	57.11.3472	4.7 K	1%, 0207 , MF	
(01)	R..0010	57.11.3103	10 K	1%, 0207 , MF	
(00)	R..0012	57.11.3222	2.2 K	1%, 0207 , MF	

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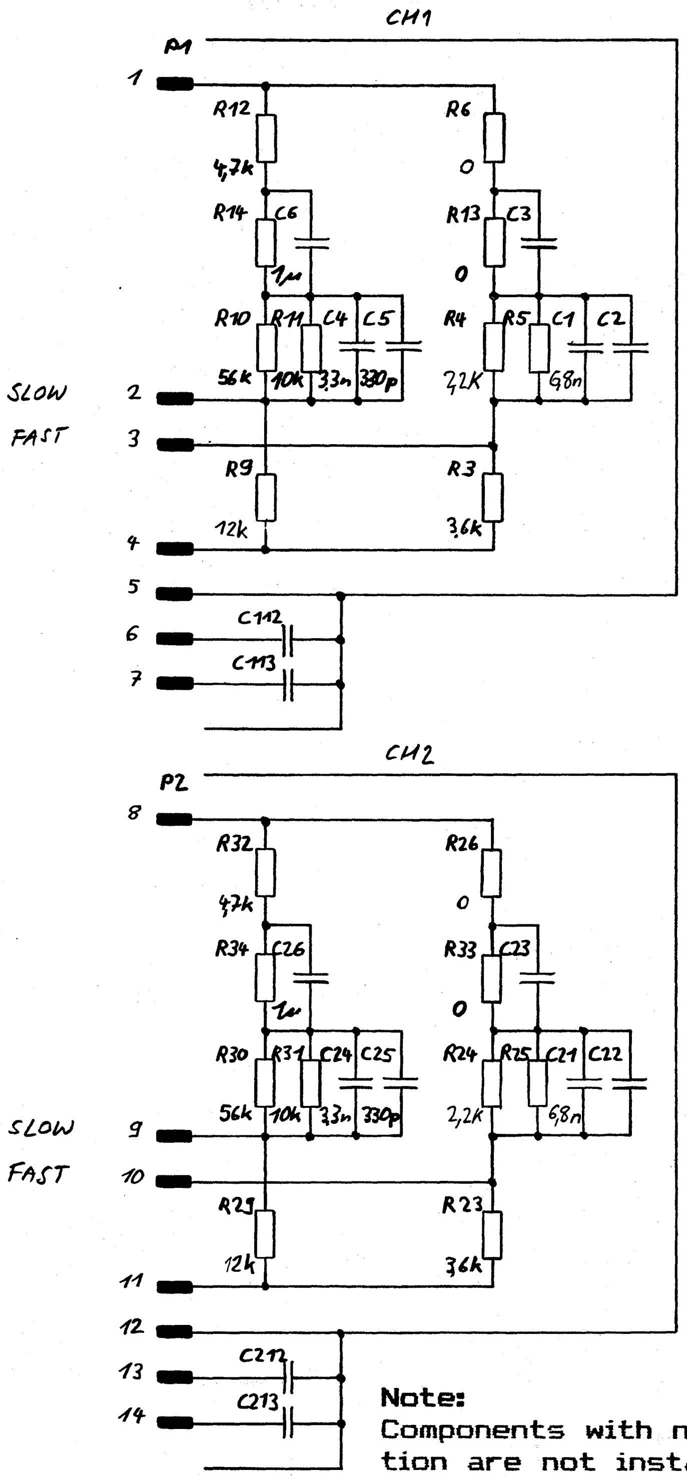
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)	R..0012	57.11.3102	1 K	1%, 0207 , MF	
(02)	R..0012	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0023	57.11.3123	12 K	1%, 0207 , MF	
	R..0024	57.11.3563	56 K	1%, 0207 , MF	
	R..0025	57.11.3103	10 K	1%, 0207 , MF	
	R..0026	57.11.3472	4.7 K	1%, 0207 , MF	
(00)	R..0029	57.11.3103	10 K	1%, 0207 , MF	
(01)	R..0029	57.11.3183	18 K	1%, 0207 , MF	
(02)	R..0029	57.11.4223	22 K	2%, 0207 , MF	
(00)	R..0030	57.11.3472	4.7 K	1%, 0207 , MF	
(01)	R..0030	57.11.3103	10 K	1%, 0207 , MF	
(00)	R..0032	57.11.3222	2.2 K	1%, 0207 , MF	
(01)	R..0032	57.11.3102	1 K	1%, 0207 , MF	
(02)	R..0032	57.11.4472	4.7 K	2%, 0207 , MF	

(01) 15.09.87 Value adjust
(02) 03.02.88 Value adjust

ORIG 86/09/15 (01) 87/09/15 (02) 88/02/03

S T U D E R (02) 88/02/03 RECORD SPEED BOARD 9.5/19 IEC 1.777.550.00 PAGE 2

RECORD SPEED BOARD 19/38 IEC 1.777.552.00

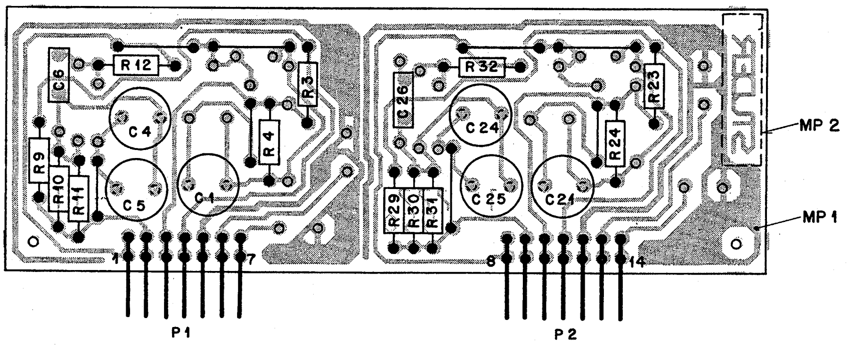

CH1
P1
1
R12
4,7k
R6
0
R14
C6
1µ
R13
C3
0
R10
56k
R11
10k
C4
3,3n
C5
330p
R4
2,2K
R5
C1
68n
C2
SLOW
2
FAST
3
R9
12k
R3
3,6k
4
5
6
C112
7
C113
CH2
P2
8
R32
4,7k
R26
0
R34
C26
1µ
R33
C23
0
R30
56k
R31
10k
C24
3,3n
C25
330p
R24
2,2K
R25
C21
6,8n
C22
SLOW
9
FAST
10
R29
12k
R23
3,6k
11
12
13
C212
14
C213

Note:
Components with no value indication are not installed.

⓪ 23.2.87 Zi Eh	① 17.7.87 J.Ch. Eh	② 15.09.87 E.Zimmermann	○ . .	○ . .
	C270			PAGE 1 OF 1
STUDER	RECORD SPEED B. 19/38 IEC (7,5/15)		SC	1.777. 552.00

PUBLISHED 5/89

RECORD SPEED BOARD 19/38 IEC 1.777.552.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	C..0001	59.05.2222	2200 P	2.5%, 160V , PP	
(02)	C..0001	59.05.2682	6800 P	2.5%, 63V , PP	
	C..0004	59.05.2332	3300 P	2.5%, 160V , PP	
	C..0005	59.05.2331	330 P	2.5%, 630V , PP	
	C..0006	59.06.5105	1 U	5%, 50V , PETP	
(00)	C..0021	59.05.2222	2200 P	2.5%, 160V , PP	
(02)	C..0021	59.05.2682	6800 P	2.5%, 63V , PP	
	C..0024	59.05.2332	3300 P	2.5%, 160V , PP	
	C..0025	59.05.2331	330 P	2.5%, 630V , PP	
	C..0026	59.06.5105	1 U	5%, 50V , PETP	
	MP.0001	1.777.550.11		RECORD SPEED BOARD PCB	
	MP.0002	1.777.552.01		LABEL	
	P..0001	54.01.0223	7 POL.	STRIP CIS	
	P..0002	54.01.0223	7 POL.	STRIP CIS	
	R..0003	57.11.3362	3.6 K	1%, 0207 , MF	
(00)	R..0004	57.11.3392	3.9 K	1%, 0207 , MF	
(02)	R..0004	57.11.3222	2.2 K	1%, 0207 , MF	
(00)	R..0005	57.11.3472	4.7 K	1%, 0207 , MF	
(02)	R..0005			not connected	
(00)	R..0006	57.11.3101	100	1%, 0207 , MF	
(02)	R..0006	1.010.324.64	0	WIRING BRIDGE	
(00)	R..0009	57.11.3822	8.2 K	1%, 0207 , MF	
(01)	R..0009	57.11.3123	12 K	1%, 0207 , MF	
	R..0010	57.11.3563	56 K	1%, 0207 , MF	
	R..0011	57.11.3103	10 K	1%, 0207 , MF	
	R..0012	57.11.3472	4.7 K	1%, 0207 , MF	
	R..0023	57.11.3362	3.6 K	1%, 0207 , MF	
(00)	R..0024	57.11.3392	3.9 K	1%, 0207 , MF	
(02)	R..0024	57.11.3222	2.2 k	1%, 0207 , MF	
(00)	R..0025	57.11.3472	4.7 K	1%, 0207 , MF	
(02)	R..0025			not connected	
(00)	R..0026	57.11.3101	100	1%, 0207 , MF	
(02)	R..0026	1.010.324.64	0	WIRING BRIDGE	
(00)	R..0029	57.11.3822	8.2 K	1%, 0207 , MF	

S T U D E R (02) 87/09/15 RECORD SPEED BOARD 19/38 IEC 1.777.552.00 PAGE 1

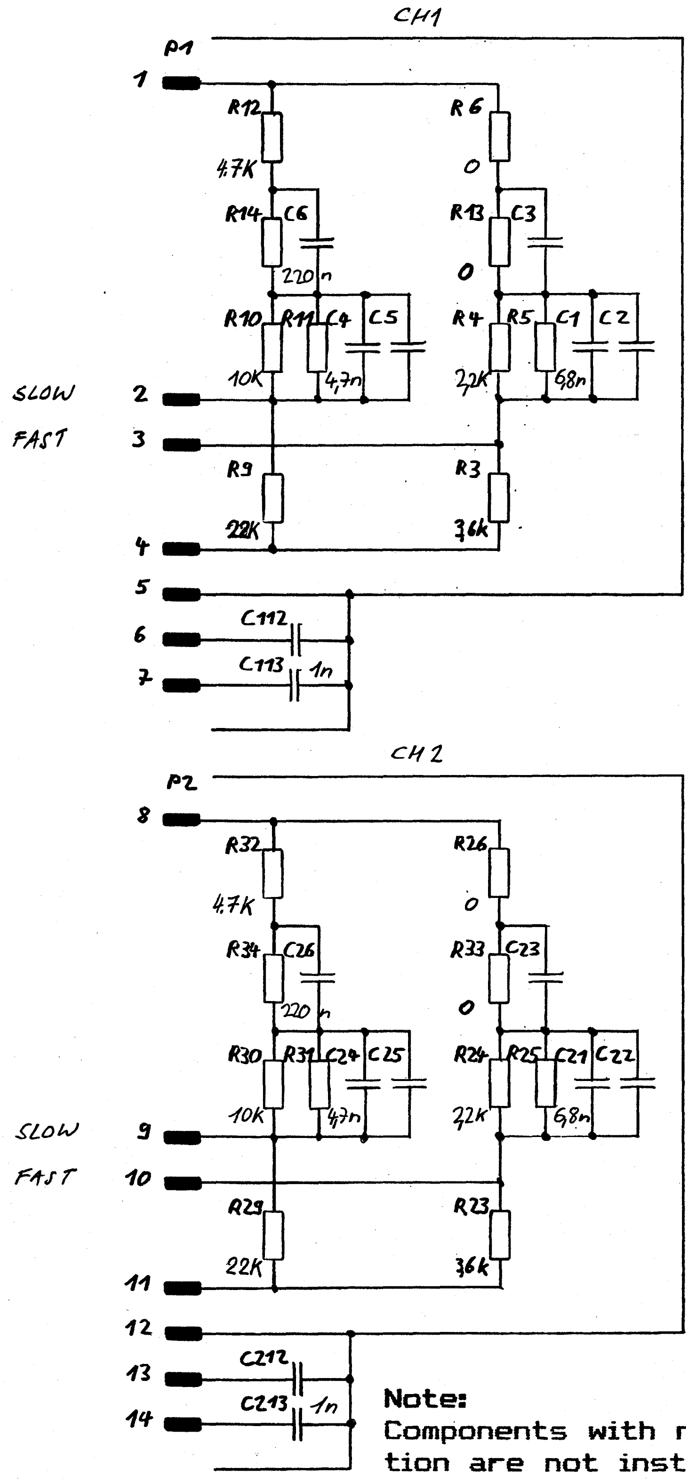
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)	R..0029	57.11.3123	12 K	1%, 0207 , MF	
	R..0030	57.11.3563	56 K	1%, 0207 , MF	
	R..0031	57.11.3103	10 K	1%, 0207 , MF	
	R..0032	57.11.3472	4.7 K	1%, 0207 , MF	

(01) 17.07.87 VALUE ADJUST
(02) 15.09.87 VALUE ADJUST

ORIG 86/09/15 (01) 87/07/17 (02) 87/09/15

S T U D E R (02) 87/09/15 RECORD SPEED BOARD 19/38 IEC 1.777.552.00 PAGE 2

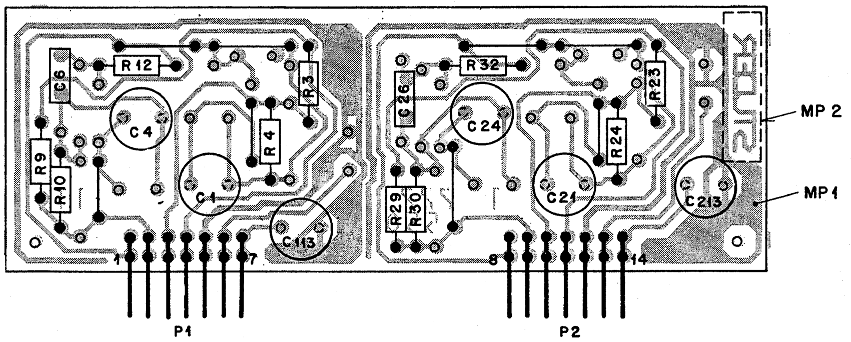
RECORD SPEED BOARD 9.5/38 IEC 1.777.554.00


CH1
P1
1
R12
4.7K
R6
0
R14
C6
220n
R13
C3
0
R10
R11
C4
C5
10K
4,7n
R4
R5
C1
C2
22K
68n
SLOW
2
FAST
3
R9
22K
R3
36k
4
5
C112
6
C113
1n
7
CH2
P2
8
R32
4.7K
R26
0
R34
C26
220n
R33
C23
0
R30
R31
C24
C25
10K
47n
R24
R25
C21
C22
22K
68n
SLOW
9
FAST
10
R29
22K
R23
36k
11
12
C212
13
C213
1n
14

Note:
Components with no value indication are not installed.

⓪ 23.2.87 Z. En	① 15.09.87 E. Zimmermann	② 03.02.88	○ . .	○ . .
	C 270			PAGE 1 OF 1
STUDER	RECORD SPEED B. 9.5/38 IEC (3,75/15)	SC	1.777.554.00	

RECORD SPEED BOARD 9.5/38 IEC 1.777.554.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	C..0001	59.05.2222	2200 P	2.5%, 160V , PP	
(01)	C..0001	59.05.2682	6800 P	2.5%, 63V , PP	
(00)	C..0004	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0004	59.05.2472	4700 P	2.5%, 63V , PP	
(00)	C..0005	59.05.2332	3300 P	2.5%, 160V , PP	
(01)	C..0005			not connected	
(00)	C..0006	59.06.5474	.47 U	5%, 63V , PETP	
(01)	C..0006	59.06.5224	.22 U	5%, 63V , PETP	
(00)	C..0021	59.05.2222	2200 P	2.5%, 160V , PP	
(01)	C..0021	59.05.2682	6800 P	2.5%, 63V , PP	
(00)	C..0024	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0024	59.05.2472	4700 P	2.5%, 63V , PP	
(00)	C..0025	59.05.2332	3300 P	2.5%, 160V , PP	
(01)	C..0025			not connected	
(00)	C..0026	59.06.5474	.47 U	5%, 63V , PETP	
(01)	C..0026	59.06.5224	.22 U	5%, 63V , PETP	
(01)	C..0113	59.05.2102	1000 P	2.5%, 630V , PP	
(01)	C..0213	59.05.2102	1000 P	2,5%, 630V , PP	
	MP.0001	1.777.550.11		RECORD SPEED BOARD PCB	
	MP.0002	1.777.554.01		LABEL	
	P..0001	54.01.0223	7 POL.	STRIP CIS	
	P..0002	54.01.0223	7 POL.	STRIP CIS	
	R..0003	57.11.3362	3.6 K	1%, 0207 , MF	
(00)	R..0004	57.11.3392	3.9 K	1%, 0207 , MF	
(01)	R..0004	57.11.3222	2.2 K	1%, 0207 , MF	
(00)	R..0005	57.11.3472	4.7 K	1%, 0207 , MF	
(01)	R..0005			not connected	
(00)	R..0006	57.11.3101	100	1%, 0207 , MF	
(01)	R..0006	1.010.324.64	0	WIRING BRIDGE	
(00)	R..0009	57.11.3103	10 K	1%, 0207 , MF	
(01)	R..0009	57.11.3183	18 K	1%, 0207 , MF	
(02)	R..0009	57.11.4223	22 K	2%, 0207 , MF	
(00)	R..0010	57.11.3472	4.7 K	1%, 0207 , MF	
(01)	R..0010	57.11.3103	10 K	1%, 0207 , MF	

S T U D E R (02) 88/02/03 RECORD SPEED BOARD 9.5/38 IEC 1.777.554.00 PAGE 1

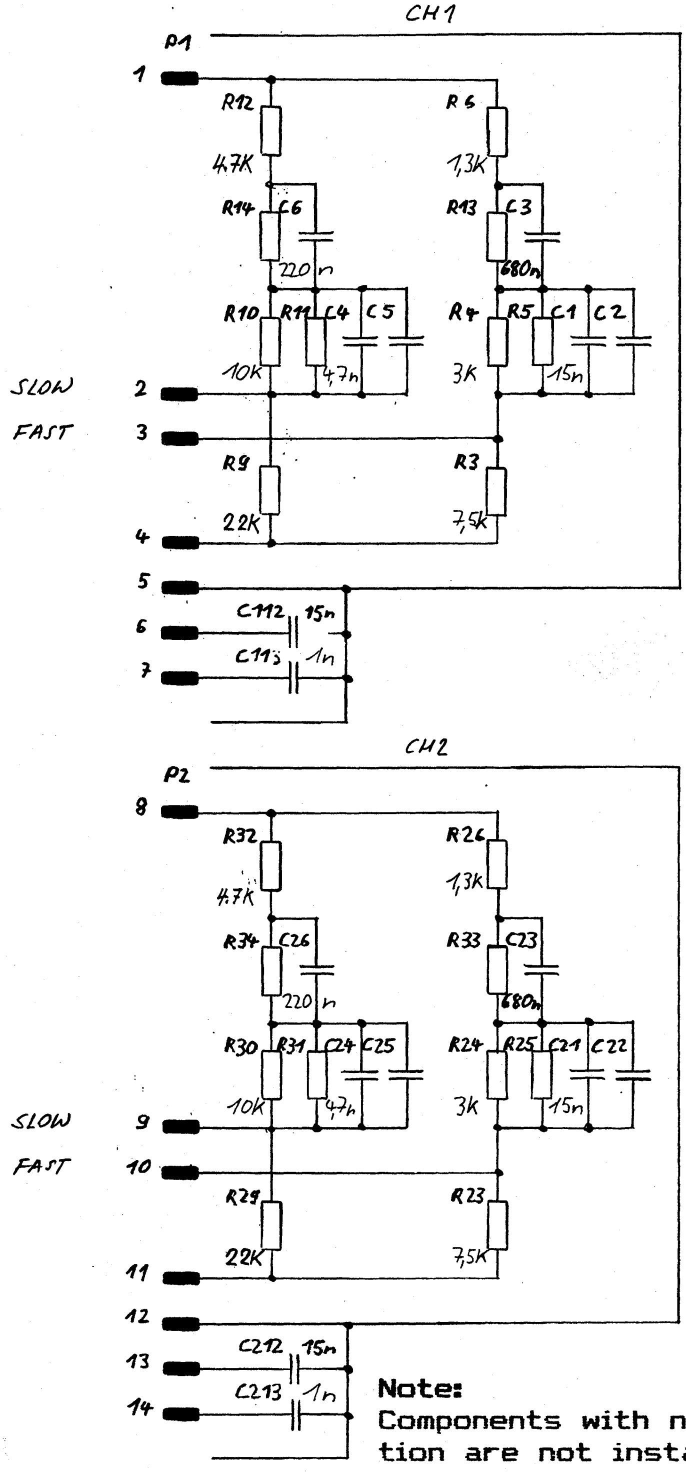
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	R..0012	57.11.3222	2.2 K	1%, 0207 , MF	
(01)	R..0012	57.11.3102	1 K	1%, 0207 , MF	
(02)	R..0012	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0023	57.11.3362	3.6 K	1%, 0207 , MF	
(00)	R..0024	57.11.3392	3.9 K	1%, 0207 , MF	
(01)	R..0024	57.11.3222	2.2 K	1%, 0207 , MF	
(00)	R..0025	57.11.3472	4.7 K	1%, 0207 , MF	
(01)	R..0025			not connected	
(00)	R..0026	57.11.3101	100	1%, 0207 , MF	
(01)	R..0026	1.010.324.64	0	WIRING BRIDGE	
(00)	R..0029	57.11.3103	10 K	1%, 0207 , MF	
(01)	R..0029	57.11.3183	18 K	1%, 0207 , MF	
(02)	R..0029	57.11.4223	22 K	2%, 0207 , MF	
(00)	R..0030	57.11.3472	4.7 K	1%, 0207 , MF	
(01)	R..0030	57.11.3103	10 K	1%, 0207 , MF	
(00)	R..0032	57.11.3222	2.2 K	1%, 0207 , MF	
(01)	R..0032	57.11.3102	1 K	1%, 0207 , MF	
(02)	R..0032	57.11.4472	4.7 K	2%, 0207 , MF	

(01) 15.09.87 Value adjust
(02) 03.02.88 Value adjust

ORIG 86/09/16 (01) 87/09/15 (02) 88/02/03

S T U D E R (02) 88/02/03 RECORD SPEED BOARD 9.5/38 IEC 1.777.554.00 PAGE 2

RECORD SPEED BOARD 9.5/19 NAB 1.777.556.00


CH1
P1
1
R12
4,7K
R6
1,3K
R14
C6
220n
R13
C3
680n
R10
R11
C4
C5
R4
R5
C1
C2
10K
4,7n
3K
15n
SLOW
2
FAST
3
R9
R3
22K
7,5K
4
5
C112 15n
6
C113 1n
7
CH2
P2
8
R32
4,7K
R26
1,3K
R34
C26
220n
R33
C23
680n
R30
R31
C24
C25
R24
R25
C21
C22
10K
4,7n
3K
15n
SLOW
9
FAST
10
R29
R23
22K
7,5K
11
12
C212 15n
13
C213 1n
14

Note:
Components with no value indication are not installed.

⓪23.2.87	① 15.09.87	② 03.02.88	○ . .		○ . .
	C270				PAGE 1 OF 1
STUDER	RECORD SPEED B.9.5/19 NAB(3,75/7,5)			SC	1.777.556.00

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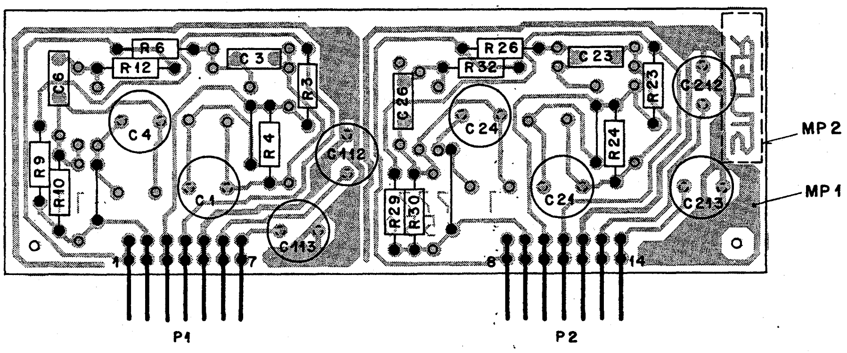
RECORD SPEED BOARD 9.5/19 NAB 1.777.556.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	C..0001	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0001	59.05.2153	.015 U	2.5%, 63V , PP	
(00)	C..0002	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0002			not connected	
	C..0003	59.06.5684	.68 U	5%, 50V , PETP	
(00)	C..0004	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0004	59.05.2472	4700 P	2.5%, 63V , PP	
(00)	C..0005	59.05.2332	3300 P	2.5%, 160V , PP	
(01)	C..0005			not connected	
(00)	C..0006	59.06.5474	.47 U	5%, 63V , PETP	
(01)	C..0006	59.06.5224	.22 U	5%, 63V , PETP	
(00)	C..0021	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0021	59.05.2153	.015 U	2.5%, 63V , PP	
(00)	C..0022	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0022			not connected	
	C..0023	59.06.5684	.68 U	5%, 50V , PETP	
(00)	C..0024	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0024	59.05.2472	4700 P	2.5%, 63V , PP	
(00)	C..0025	59.05.2332	3300 P	2.5%, 160V , PP	
(01)	C..0025			not connected	
(00)	C..0026	59.06.5474	.47 U	5%, 63V , PETP	
(01)	C..0026	59.06.5224	.22 U	5%, 63V , PETP	
	C..0112	59.05.2153	.015 U	2.5%, 63V , PP	
(00)	C..0113	59.05.2153	.015 U	2.5%, 63V , PP	
(01)	C..0113	59.05.2102	1000 P	2.5%, 630V , PP	
	C..0212	59.05.2153	.015 U	2.5%, 63V , PP	
(00)	C..0213	59.05.2153	.015 U	2.5%, 63V , PP	
(01)	C..0213	59.05.2102	1000 P	2.5%, 630V , PP	
	MP.0001	1.777.550.11		RECORD SPEED BOARD PCB	
	MP.0002	1.777.556.01		LABEL	
	P..0001	54.01.0223	7 POL.	STRIP CIS	
	P..0002	54.01.0223	7 POL.	STRIP CIS	
(00)	R..0003	57.11.3822	8.2 K	1%, 0207 , MF	
(01)	R..0003	57.11.3752	7.5 K	1%, 0207 , MF	

S T U D E R (02) 88/02/03 RECORD SPEED BOARD 9.5/19 NAB 1.777.556.00 PAGE 1

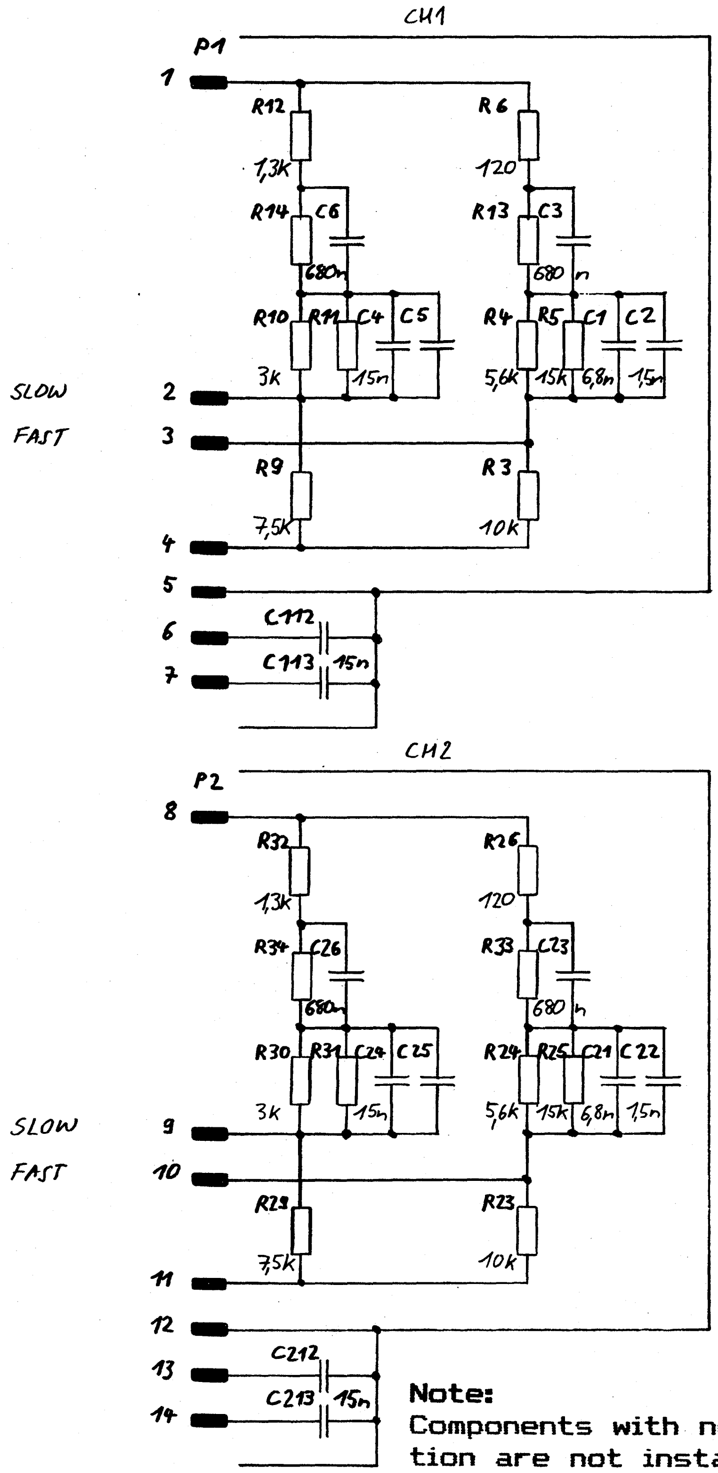
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	R..0004	57.11.3332	3.3 K	1%, 0207 , MF	
(01)	R..0004	57.11.3302	3 K	1%, 0207 , MF	
(00)	R..0006	57.11.3152	1.5 K	1%, 0207 , MF	
(01)	R..0006	57.11.3132	1.3 K	1%, 0207 , MF	
(00)	R..0009	57.11.3103	10 K	1%, 0207 , MF	
(01)	R..0009	57.11.3183	18 K	1%, 0207 , MF	
(02)	R..0009	57.11.4223	22 K	2%, 0207 , MF	
(00)	R..0010	57.11.3472	4.7 K	1%, 0207 , MF	
(01)	R..0010	57.11.3103	10 K	1%, 0207 , MF	
(00)	R..0012	57.11.3222	2.2 K	1%, 0207 , MF	
(01)	R..0012	57.11.3102	1 K	1%, 0207 , MF	
(02)	R..0012	57.11.4472	4.7 K	2%, 0207 , MF	
(00)	R..0023	57.11.3822	8.2 K	1%, 0207 , MF	
(01)	R..0023	57.11.3752	7.5 K	1%, 0207 , MF	
(00)	R..0024	57.11.3332	3.3 K	1%, 0207 , MF	
(01)	R..0024	57.11.3302	3 K	1%, 0207 , MF	
(00)	R..0026	57.11.3152	1.5 K	1%, 0207 , MF	
(01)	R..0026	57.11.3132	1.3 K	1%, 0207 , MF	
(00)	R..0029	57.11.3103	10 K	1%, 0207 , MF	
(01)	R..0029	57.11.3183	18 K	1%, 0207 , MF	
(02)	R..0029	57.11.4223	22 K	2%, 0207 , MF	
(00)	R..0030	57.11.3472	4.7 K	1%, 0207 , MF	
(01)	R..0030	57.11.3103	10 K	1%, 0207 , MF	
(00)	R..0032	57.11.3222	2.2 K	1%, 0207 , MF	
(01)	R..0032	57.11.3102	1 K	1%, 0207 , MF	
(02)	R..0032	57.11.4472	4.7 K	2%, 0207 , MF	

(01) 15.09.87 Value adjust
(02) 03.02.88 Value adjust

ORIG 86/09/16 (01) 87/09/15 (02) 88/02/03

S T U D E R (02) 88/02/03 RECORD SPEED BOARD 9.5/19 NAB 1.777.556.00 PAGE 2

RECORD SPEED BOARD 19/38 NAB 1.777.558.00


CH1
P1
1
R12
1,3k
R6
120
R14
C6
680n
R13
C3
680 n
R10
R11
C4
C5
3k
15n
R4
R5
C1
C2
5,6k
15k
6,8n
1,5n
SLOW
2
FAST
3
R9
7,5k
R3
10k
4
5
C112
6
C113
15n
7
CH2
P2
8
R32
1,3k
R26
120
R34
C26
680n
R33
C23
680 n
R30
R31
C24
C25
3k
15n
R24
R25
C21
C22
5,6k
15k
6,8n
1,5n
SLOW
9
FAST
10
R29
7,5k
R23
10k
11
12
C212
13
C213
15n
14

Note:
Components with no value indication are not installed.

⓪ 23.2.87	① 15.09.87 E.	○ . .	○ . .	○ . .
	C270			PAGE 1 OF 1
STUDER	RECORD SPEED B. 19/38 NAB(7,5/15)		SC	1.777.558.00

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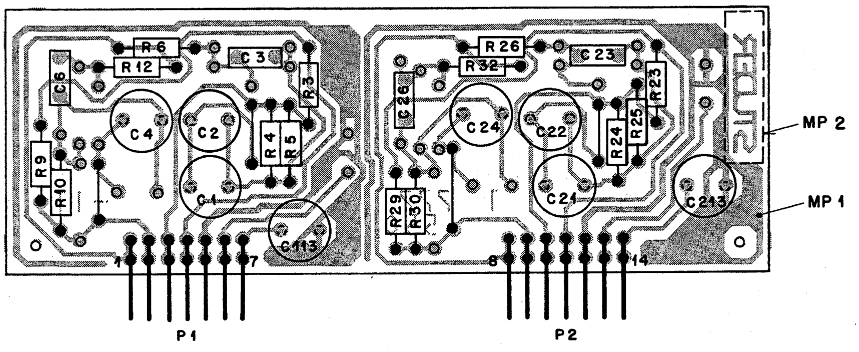
RECORD SPEED BOARD 19/38 NAB 1.777.558.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	C..0001	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0001	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0002	59.05.2152	1500 P	2.5%, 160V , PP	
(00)	C..0003	59.06.5105	1 U	5%, 50V , PETP	
(01)	C..0003	59.06.5684	.68 U	5%, 50V , PETP	
(00)	C..0004	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0004	59.05.2153	.015 U	2.5%, 63V , PP	
(00)	C..0005	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0005			not connected	
	C..0006	59.06.5684	.68 U	5%, 50V , PETP	
(00)	C..0021	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0021	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0022	59.05.2152	1500 P	2.5%, 160V , PP	
(00)	C..0023	59.06.5105	1 U	5%, 50V , PETP	
(01)	C..0023	59.06.5684	.68 U	5%, 50V , PETP	
(00)	C..0024	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0024	59.05.2153	.015 U	2.5%, 63V , PP	
(00)	C..0025	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0025			not connected	
	C..0026	59.06.5684	.68 U	5%, 50V , PETP	
	C..0113	59.05.2153	.015 U	2.5%, 63V , PP	
	C..0213	59.05.2153	.015 U	2.5%, 63V , PP	
	MP.0001	1.777.550.11		RECORD SPEED BOARD PCB	
	MP.0002	1.777.558.01		LABEL	
	P..0001	54.01.0223	7 POL.	STRIP CIS	
	P..0002	54.01.0223	7 POL.	STRIP CIS	
(00)	R..0003	57.11.3822	8.2 K	1%, 0207 , MF	
(01)	R..0003	57.11.3103	10 K	1%, 0207 , MF	
(00)	R..0004	57.11.3332	3.3 K	1%, 0207 , MF	
(01)	R..0004	57.11.3562	5.6 K	1%, 0207 , MF	
(01)	R..0005	57.11.3153	15 K	1%, 0207 , MF	
(00)	R..0006	57.11.3101	100	1%, 0207 , MF	
(01)	R..0006	57.11.3121	120	1%, 0207 , MF	
(00)	R..0009	57.11.3822	8.2 K	1%, 0207 , MF	

S T U D E R (01) 87/09/15 RECORD SPEED BOARD 19/38 NAB 1.777.558.00 PAGE 1

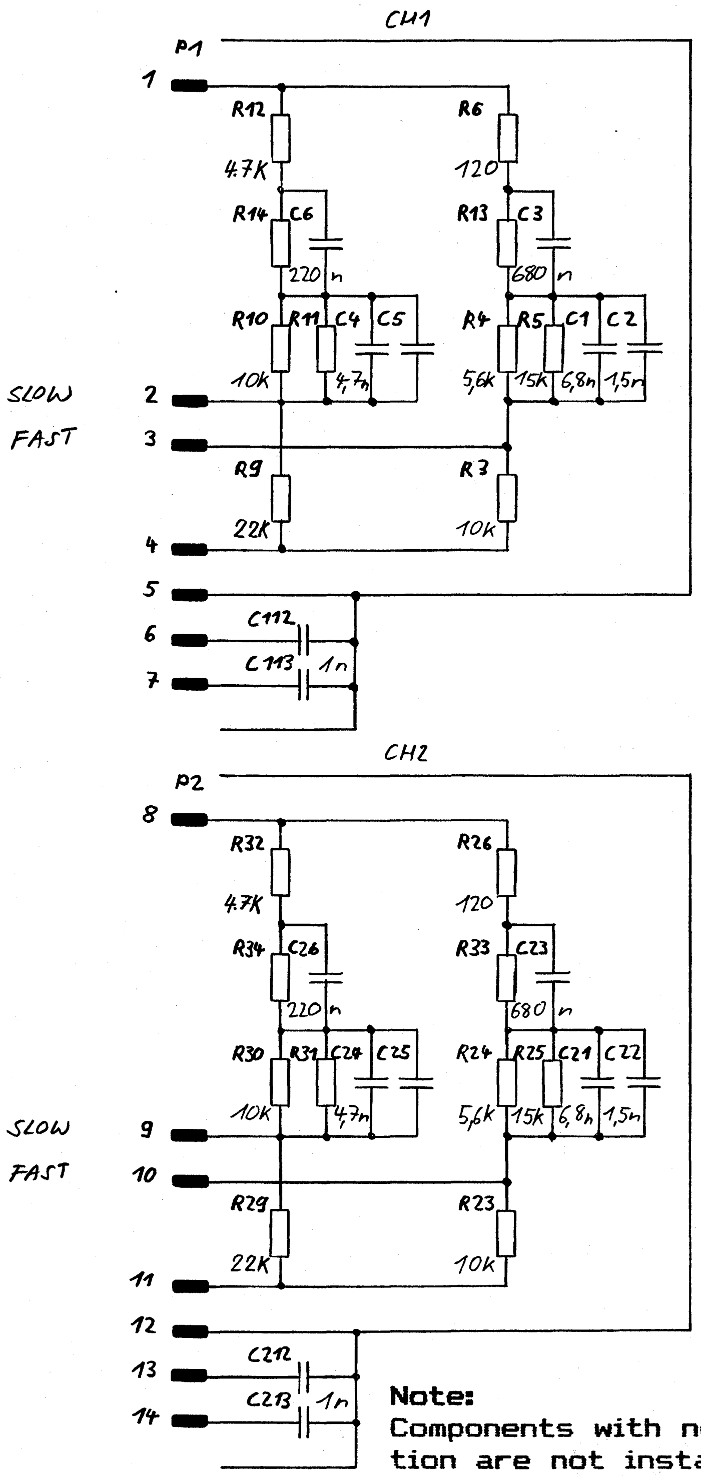
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)	R..0009	57.11.3752	7.5 K	1%, 0207 , MF	
(00)	R..0010	57.11.3332	3.3 K	1%, 0207 , MF	
(01)	R..0010	57.11.3302	3 K	1%, 0207 , MF	
(00)	R..0012	57.11.3152	1.5 K	1%, 0207 , MF	
(01)	R..0012	57.11.3132	1.3 K	1%, 0207 , MF	
(00)	R..0023	57.11.3822	8.2 K	1%, 0207 , MF	
(01)	R..0023	57.11.3103	10 K	1%, 0207 , MF	
(00)	R..0024	57.11.3332	3.3 K	1%, 0207 , MF	
(01)	R..0024	57.11.3562	5.6 K	1%, 0207 , MF	
(01)	R..0025	57.11.3153	15 K	1%, 0207 , MF	
(00)	R..0026	57.11.3101	100	1%, 0207 , MF	
(01)	R..0026	57.11.3121	120	1%, 0207 , MF	
(00)	R..0029	57.11.3822	8.2 K	1%, 0207 , MF	
(01)	R..0029	57.11.3752	7.5 K	1%, 0207 , MF	
(00)	R..0030	57.11.3332	3.3 K	1%, 0207 , MF	
(01)	R..0030	57.11.3302	3 K	1%, 0207 , MF	
(00)	R..0032	57.11.3152	1.5 K	1%, 0207 , MF	
(01)	R..0032	57.11.3132	1.3 K	1%, 0207 , MF	

(01) 15.09.87 VALUE ADJUST

ORIG 86/09/16 (01) 87/09/15

S T U D E R (01) 87/09/15 RECORD SPEED BOARD 19/38 NAB 1.777.558.00 PAGE 2

RECORD SPEED BOARD 9.5/38 NAB 1.777.559.00

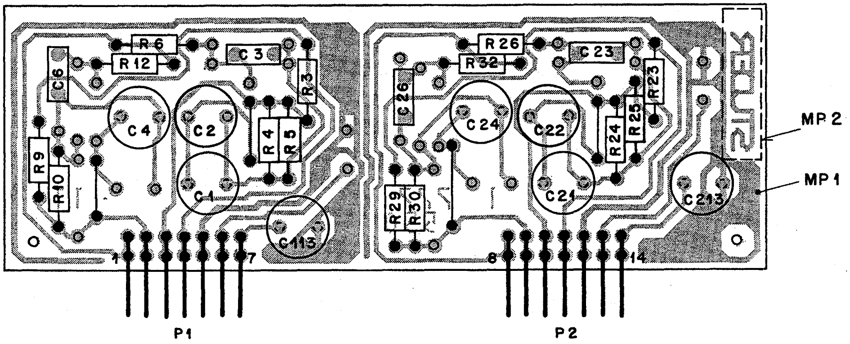

CH1
P1
1
R12
4.7K
R6
120
R14
C6
220 n
R13
C3
680 n
R10
10k
R11
C4
4,7n
C5
R4
5,6k
R5
15k
C1
6,8n
C2
1,5n
SLOW
2
FAST
3
R9
22K
R3
10k
4
5
6
C112
C113
1n
7
CH2
P2
8
R32
4.7K
R26
120
R34
C26
220 n
R33
C23
680 n
R30
10k
R31
C24
47n
C25
R24
5,6k
R25
15k
C21
6,8n
C22
1,5n
SLOW
9
FAST
10
R29
22K
R23
10k
11
12
C212
13
C213
1n
14

Note:
Components with no value indication are not installed.

⓪ 23.2.87	① 15.09.87	② 03.02.88	○ . .	○ . .
	C270			PAGE 1 OF 1
STUDER	RECORD SPEED B. 9.5 / 38 NAB (3,75/15)	SC	1.777.559.00	

PUBLISHED 5/89

RECORD SPEED BOARD 9.5/38 NAB 1.777.559.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	C..0001	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0001	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0002	59.05.2152	1500 P	2.5%, 160V , PP	
(00)	C..0003	59.06.5105	1 U	5%, 50V , PETP	
(01)	C..0003	59.06.5684	.68 U	5%, 50V , PETP	
(00)	C..0004	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0004	59.05.2472	4700 P	2.5%, 63V , PP	
(00)	C..0005	59.05.2332	3300 P	2.5%, 160V , PP	
(01)	C..0005			not connected	
(00)	C..0006	59.06.5474	.47 U	5%, 63V , PETP	
(01)	C..0006	59.06.5224	.22 U	5%, 63V , PETP	
(00)	C..0021	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0021	59.05.2682	6800 P	2.5%, 63V , PP	
(01)	C..0022	59.05.2152	1500 P	2.5%, 63V , PP	
(00)	C..0023	59.06.5105	1 U	5%, 50V , PETP	
(01)	C..0023	59.06.5684	.68 U	5%, 50V , PETP	
(00)	C..0024	59.05.2103	.01 U	2.5%, 63V , PP	
(01)	C..0024	59.05.2472	4700 P	2.5%, 63V , PP	
(00)	C..0025	59.05.2332	3300 P	2.5%, 160V , PP	
(01)	C..0025			not connected	
(00)	C..0026	59.06.5474	.47 U	5%, 63V , PETP	
(01)	C..0026	59.06.5224	.22 U	5%, 63V , PETP	
(00)	C..0113	59.05.2153	.015 U	2.5%, 63V , PP	
(01)	C..0113	59.05.2102	1000 P	2.5%, 630V , PP	
(00)	C..0213	59.05.2153	.015 U	2.5%, 63V , PP	
(01)	C..0213	59.05.2102	1000 P	2.5%, 630V , PP	
	MP.0001	1.777.550.11		RECORD SPEED BOARD PCB	
	MP.0002	1.777.559.01		LABEL	
	P..0001	54.01.0223	7 POL	STRIP CIS	
	P..0002	54.01.0223	7 POL	STRIP CIS	
(00)	R..0003	57.11.3822	8.2 K	1%, 0207 , MF	
(01)	R..0003	57.11.3103	10 K	1%, 0207 , MF	
(00)	R..0004	57.11.3332	3.3 K	1%, 0207 , MF	
(01)	R..0004	57.11.3562	5.6 K	1%, 0207 , MF	

S T U D E R (02) 88/02/03 RECORD SPEED BOARD 9.5/38 NAB 1.777.559.00 PAGE 1

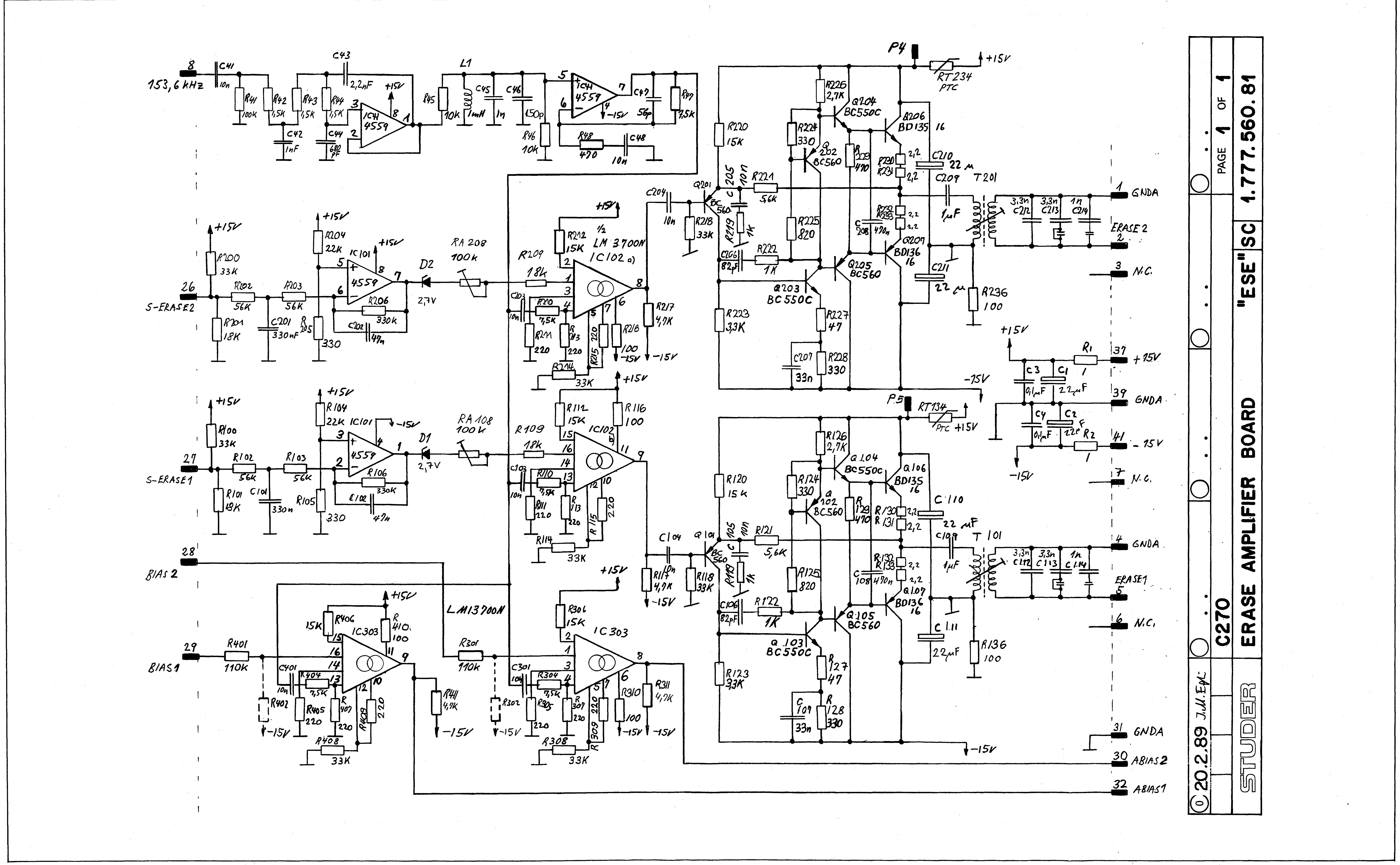
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)	R..0005	57.11.3153	15 K	1%, 0207 , MF	
(00)	R..0006	57.11.3101	100	1%, 0207 , MF	
(01)	R..0006	57.11.3121	120	1%, 0207 , MF	
(00)	R..0009	57.11.3103	10 K	1%, 0207 , MF	
(01)	R..0009	57.11.3183	18 K	1%, 0207 , MF	
(02)	R..0009	57.11.4223	22 K	2%, 0207 , MF	
(00)	R..0010	57.11.3472	4.7 K	1%, 0207 , MF	
(01)	R..0010	57.11.3103	10 K	1%, 0207 , MF	
(00)	R..0012	57.11.3222	2.2 K	1%, 0207 , MF	
(01)	R..0012	57.11.3102	1 K	1%, 0207 , MF	
(02)	R..0012	57.11.4472	4.7 K	2%, 0207 , MF	
(00)	R..0023	57.11.3822	8.2 K	1%, 0207 , MF	
(01)	R..0023	57.11.3103	10 K	1%, 0207 , MF	
(00)	R..0024	57.11.3332	3.3 K	1%, 0207 , MF	
(01)	R..0024	57.11.3562	5.6 K	1%, 0207 , MF	
(01)	R..0025	57.11.3153	15 K	1%, 0207 , MF	
(00)	R..0026	57.11.3101	100	1%, 0207 , MF	
(01)	R..0026	57.11.3121	120	1%, 0207 , MF	
(00)	R..0029	57.11.3103	10 K	1%, 0207 , MF	
(01)	R..0029	57.11.3183	18 K	1%, 0207 , MF	
(02)	R..0029	57.11.4223	22 K	2%, 0207 , MF	
(00)	R..0030	57.11.3472	4.7 K	1%, 0207 , MF	
(01)	R..0030	57.11.3103	10 K	1%, 0207 , MF	
(00)	R..0032	57.11.3222	2.2 K	1%, 0207 , MF	
(01)	R..0032	57.11.3102	1 K	1%, 0207 , MF	
(02)	R..0032	57.11.4472	4.7 K	2%, 0207 , MF	

(01) 15.09.87 Value adjust
(02) 03.02.88 Value adjust

ORIG 86/09/16 (01) 87/09/15 (02) 88/02/03

S T U D E R (02) 88/02/03 RECORD SPEED BOARD 9.5/38 NAB 1.777.559.00 PAGE 2

ERASE AMPLIFIER BOARD 1.777.560.81


8
153,6 kHz
C41 10n
R41 100K
R42 1,5K
R43 1,5K
R44 1,5K
C42 1nF
C44 680 pF
C43 2,2nF
IC4 4559
+15V
L1 1mH
R45 10K
C45 1n
C46 150p
R46 10K
C47 56p
R47 7,5K
R48 470
C48 10n
-15V
26
S-ERASE2
R200 33K
R201 18K
R202 56K
R203 56K
C201 330nF
R205 330
R204 22K
IC101 4559
R206 330K
C202 47n
D2 2,7V
RA 208 100k
R209 18k
1/2 LM 3700N IC102 a)
R212 15K
C103 10n
R210 7,5K
R211 220
R213 220
R215 220
R218 100
R214 33K
R217 4,7K
C204 10n
Q201 BC560
R218 33K
C205 10n
R219 1K
C206 82pF
R220 15K
R221 5,6K
R222 1K
R223 33K
R224 330
R225 820
R226 2,7K
Q204 BC550C
Q202 BC560
Q203 BC550C
Q205 BC560
R227 47
R228 330
C207 33n
R229 470
Q206 BD135 16
Q207 BD136 16
R230 R231 2,2
R232 R233 2,2
C208 470n
C210 22 µ
C209 1µF
C211 22 µ
T201
R236 100
P4
RT234 PTC
P5
RT134 PTC
C212 3,3n
C213 3,3n
C214 1n
1 GNDA
ERASE 2
2
3 N.C.
37 +15V
39 GNDA
41 -15V
7 N.C.
C3 0,1µF
C1 22µF
C4 0,1µF
C2 22µF
R1 1
R2 1
27
S-ERASE1
R100 33K
R101 18K
R102 56K
R103 56K
C101 330n
R105 330
R104 22K
IC101 4559
R106 330K
C102 47n
D1 2,7V
RA 108 100k
R109 18k
IC102
R112 15K
R116 100
R110 7,5K
R111 220
R113 220
R115
R114 33K
C104 10n
R117 4,7K
Q101 BC560
C105 10n
R119 1K
R118 33K
C106 82pF
R120 15K
R121 5,6K
R122 1K
R123 33K
R124 330
R125 820
R126 2,7K
Q104 BC550C
Q102 BC560
Q103 BC550C
Q105 BC560
R127 47
R128 330
C107 33n
R129 470
Q106 BD135 16
Q107 BD136 16
R130 R131 2,2
R132 R133 2,2
C108 470n
C110 22 µF
C109 1µF
C111 22µF
T101
R136 100
C112 3,3n
C113 3,3n
C114 1n
4 GNDA
ERASE1
5
6 N.C.
28
BIAS 2
29
BIAS1
R401 110K
C401 10n
R402
R404 7,5K
R405 220
R406 15K
R407 220
R409 220
R408 33K
R410 100
IC303
R411 4,7K
LM13700N
R301 110K
C301 10n
R302
R304 7,5K
R305 220
R306 15K
R307 220
R309 220
R308 33K
R310 100
R311 4,7K
IC303
31 GNDA
30 ABIAS2
32 ABIAS1
PAGE 1 OF 1
"ESE" SC 1.777.560.81
ERASE AMPLIFIER BOARD
C270
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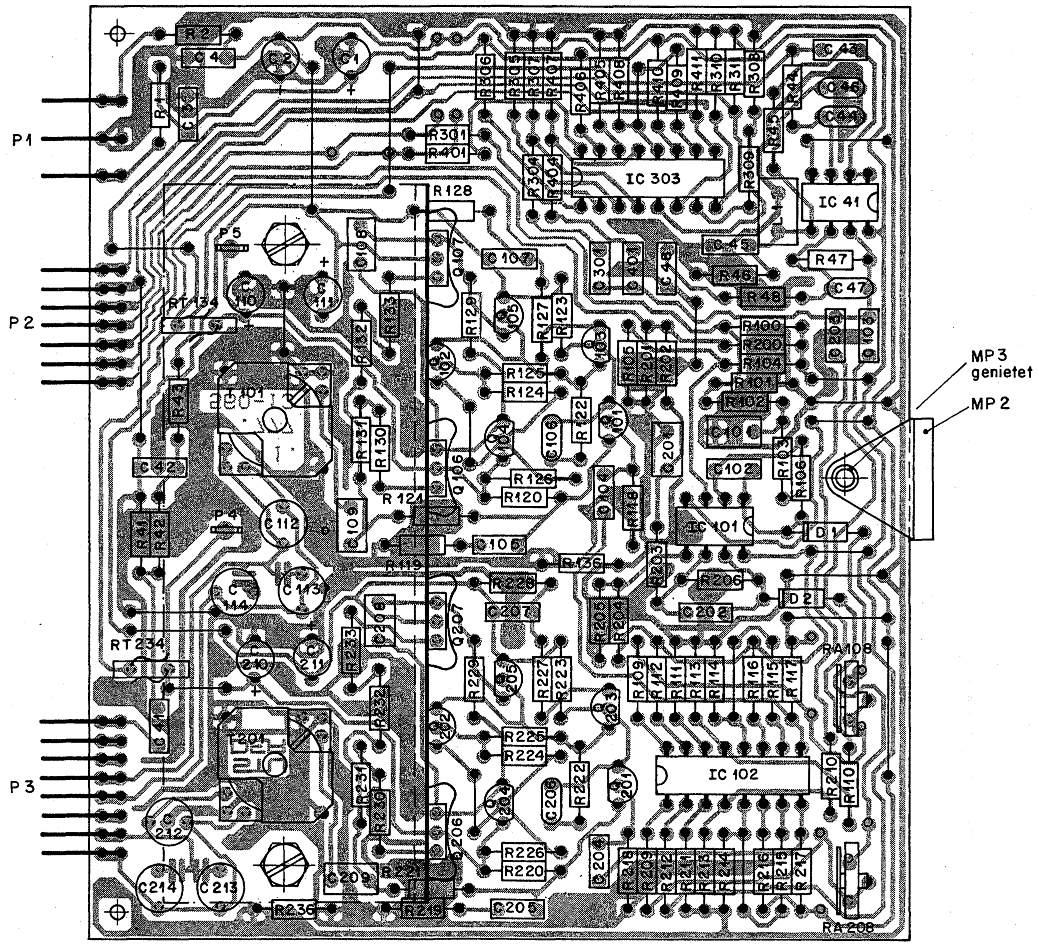
ERASE AMPLIFIER BOARD 1.777.560.81



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.22.5220	22 U	-20%, 25V , EL	
	C..0002	59.22.5220	22 U	-20%, 25V , EL	
	C..0003	59.06.0104	.1 U	10%, 63V , PETP	
	C..0004	59.06.0104	.1 U	10%, 63V , PETP	
	C..0041	59.06.5103	.01 U	5%, 63V , PETP	
	C..0042	59.06.5102	1000 P	5%, 63V , PETP	
	C..0043	59.06.5222	2200 P	5%, 63V , PETP	
	C..0044	59.32.2681	680 P	10%, 50V , CER	
	C..0045	59.06.5102	1000 P	5%, 63V , PETP	
	C..0046	59.34.4151	150 P	5%, N750 , CER	
	C..0047	59.34.4560	56 P	5%, N750 , CER	
	C..0048	59.06.0103	.01 U	10%, 63V , PETP	
	C..0101	59.06.5334	.33 U	5%, 63V , PETP	
	C..0102	59.06.5473	.047 U	5%, 63V , PETP	
	C..0103	59.06.0103	.01 U	10%, 63V , PETP	
	C..0104	59.06.0103	.01 U	10%, 63V , PETP	
	C..0105	59.06.0103	.01 U	10%, 63V , PETP	
	C..0106	59.34.4820	82 P	5%, N750 , CER	
	C..0107	59.06.0333	.033 U	10%, 63V , PETP	
	C..0108	59.06.0474	.47 U	10%, 63V , PETP	
	C..0109	59.06.0105	1.0 U	10%, 50V , PETP	
	C..0110	59.22.5220	22 U	-20%, 25V , EL	
	C..0111	59.22.5220	22 U	-20%, 25V , EL	
	C..0112	59.05.1332	3300 P	1%, 63V , PETP	
	C..0113	59.05.1332	3300 P	1%, 63V , PETP	
	C..0114	59.05.1102	1000 P	1%, 63V , PETP	
	C..0201	59.06.5334	.33 U	5%, 63V , PETP	
	C..0202	59.06.5473	.047 U	5%, 63V , PETP	
	C..0203	59.06.0103	.01 U	10%, 63V , PETP	
	C..0204	59.06.0103	.01 U	10%, 63V , PETP	
	C..0205	59.06.0103	.01 U	10%, 63V , PETP	
	C..0206	59.34.4820	82 P	5%, N750 , CER	
	C..0207	59.06.0333	.033 U	10%, 63V , PETP	
	C..0208	59.06.0474	.47 U	10%, 63V , PETP	
	C..0209	59.06.0105	1.0 U	10%, 50V , PETP	
	C..0210	59.22.5220	22 U	-20%, 25V , EL	
	C..0211	59.22.5220	22 U	-20%, 25V , EL	

STUDER (02) 87/11/15 ERASE AMPLIFIER BOARD A 1.777.560.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0212	59.05.1332	3300 P	1%, 63V , PETP	
	C..0213	59.05.1332	3300 P	1%, 63V , PETP	
	C..0214	59.05.1102	1000 P	1%, 63V , PETP	
	C..0301	59.06.0103	.01 U	10%, 63V , PETP	
	C..0401	59.06.0103	.01 U	10%, 63V , PETP	
	D..0001	50.04.1106	2.7 V	5%, .40W, Z	
	D..0002	50.04.1106	2.7 V	5%, .40W, Z	
	IC.0041	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0101	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0102	50.09.0112		LM 13 700 N, NE 5517 N	Nat,Sig
	IC.0303	50.09.0112		LM 13 700 N, NE 5517 N	Nat,Sig
	L..0001	62.02.3102	1 M	10%, RAD., RM 5	
(03)	LL.0001	1.777.560.93		WL-ERASE AMPLIFIER	St
(00)	MP.0001	1.777.560.11		ERASE AMPL. PCB	St
(02)	MP.0001	1.777.560.12		ERASE AMPL. PCB	St
	MP.0002	1.010.001.33		GRIP	St
	MP.0003	28.21.1360	D2.25*5	TUBULARRIVET	St
(00)	MP.0004	50.20.3003	4 pcs	HEAT SINKS	Thy
(01)	MP.0004	1.777.560.01	1 pcs	HEAT SINKS	St
(01)	MP.0005	50.20.2002	4 pcs	CLAMP	St
(01)	MP.0006	1.010.022.22	2 pcs	RIVETNUT	St
(01)	MP.0007	21.26.0353	2 pcs	SCREW	St
(01)	MP.0008	24.16.1030	2 pcs	WASHER	St
(01)	MP.0009	1.777.560.02	1 pcs	INSULATION	St
	P..0001	54.01.0469	3 POL.	STRIP CIS ANGLE	AMP
	P..0002	54.01.0223	7 POL.	STRIP CIS ANGLE	AMP
	P..0003	54.01.0270	8 POL.	STRIP CIS ANGLE	AMP
	P..0004	54.02.0320	2.8*0.8	TEST POINT	Lo
	P..0005	54.02.0320	2.8*0.8	TEST POINT	
	Q..0101	50.03.0496		BC 560 .A	Sie

STUDER (03) 88/12/06 ERASE AMPLIFIER BOARD A PL 1.777.560.00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	Q..0104	50.03.0407		BC 550 C (BC 109 C)	Sie,Ph
	Q..0105	50.03.0496		BC 560 .A	Sie
	Q..0106	50.03.0495		BD 135-16	Ph,SGS,To
	Q..0107	50.03.0510		BD 136-16	Ph,SGS,To
	Q..0201	50.03.0496		BC 560 .A	Sie
	Q..0202	50.03.0496		BC 560 .A	Sie
	Q..0203	50.03.0407		BC 550 C (BC 109 C)	Sie,Ph
	Q..0204	50.03.0407		BC 550 C (BC 109 C)	Sie,Ph
	Q..0205	50.03.0496		BC 560 .A	Sie
	Q..0206	50.03.0495		BD 135-16	Ph,SGS,To
	Q..0207	50.03.0510		BD 136-16	Ph,SGS,To
	R..0001	57.11.4109	1	2%, 0207 , MF	
	R..0002	57.11.4109	1	2%, 0207 , MF	
	R..0041	57.11.4104	100 K	2%, 0207 , MF	
	R..0042	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0043	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0044	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0045	57.11.4103	10 K	2%, 0207 , MF	
	R..0046	57.11.4103	10 K	2%, 0207 , MF	
	R..0047	57.11.3752	7.5 K	1%, 0207 , MF	
	R..0048	57.11.4471	470	2%, 0207 , MF	
	R..0100	57.11.4333	33 K	2%, 0207 , MF	
	R..0101	57.11.4183	18 K	2%, 0207 , MF	
	R..0102	57.11.4563	56 K	2%, 0207 , MF	
	R..0103	57.11.4563	56 K	2%, 0207 , MF	
	R..0104	57.11.4223	22 K	2%, 0207 , MF	
	R..0105	57.11.4331	330	2%, 0207 , MF	
	R..0106	57.11.4334	330 K	2%, 0207 , MF	
	R..0109	57.11.4183	18 K	2%, 0207 , MF	
	R..0110	57.11.3752	7.5 K	1%, 0207 , MF	
	R..0111	57.11.4221	220	2%, 0207 , MF	
	R..0112	57.11.4153	15 K	2%, 0207 , MF	
	R..0113	57.11.4221	220	2%, 0207 , MF	
	R..0114	57.11.4333	33 K	2%, 0207 , MF	
	R..0115	57.11.4221	220	2%, 0207 , MF	
	R..0116	57.11.4101	100	2%, 0207 , MF	

STUDER (02) 87/11/15 ERASE AMPLIFIER BOARD A 1.777.560.00 PAGE 3

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0117	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0118	57.11.4333	33 K	2%, 0207 , MF	
	R..0119	57.11.4102	1 K	2%, 0207 , MF	
	R..0120	57.11.4153	15 K	2%, 0207 , MF	
	R..0121	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0122	57.11.4102	1 K	2%, 0207 , MF	
	R..0123	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0124	57.11.4331	330	2%, 0207 , MF	
	R..0125	57.11.4821	820	2%, 0207 , MF	
	R..0126	57.11.4272	2.7 K	2%, 0207 , MF	
	R..0127	57.11.4470	47	2%, 0207 , MF	
	R..0128	57.11.4331	330	2%, 0207 , MF	
	R..0129	57.11.4471	470	2%, 0207 , MF	
	R..0130	57.11.4229	2.2	2%, 0207 , MF	
	R..0131	57.11.4229	2.2	2%, 0207 , MF	
	R..0132	57.11.4229	2.2	2%, 0207 , MF	
	R..0133	57.11.4229	2.2	2%, 0207 , MF	
	R..0136	57.11.4101	100	2%, 0207 , MF	
	R..0200	57.11.4333	33 K	2%, 0207 , MF	
	R..0201	57.11.4183	18 K	2%, 0207 , MF	
	R..0202	57.11.4563	56 K	2%, 0207 , MF	
	R..0203	57.11.4563	56 K	2%, 0207 , MF	
	R..0204	57.11.4223	22 K	2%, 0207 , MF	
	R..0205	57.11.4331	330	2%, 0207 , MF	
	R..0206	57.11.4334	330 K	2%, 0207 , MF	
	R..0209	57.11.4183	18 K	2%, 0207 , MF	
	R..0210	57.11.3752	7.5 K	1%, 0207 , MF	
	R..0211	57.11.4221	220	2%, 0207 , MF	
	R..0212	57.11.4153	15 K	2%, 0207 , MF	
	R..0213	57.11.4221	220	2%, 0207 , MF	
	R..0214	57.11.4333	33 K	2%, 0207 , MF	
	R..0215	57.11.4221	220	2%, 0207 , MF	
	R..0216	57.11.4101	100	2%, 0207 , MF	
	R..0217	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0218	57.11.4333	33 K	2%, 0207 , MF	
	R..0219	57.11.4102	1 K	2%, 0207 , MF	
	R..0220	57.11.4153	15 K	2%, 0207 , MF	

STUDER (02) 87/11/15 ERASE AMPLIFIER BOARD A 1.777.560.00 PAGE 4

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0221	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0222	57.11.4102	1 K	2%, 0207 , MF	
	R..0223	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0224	57.11.4331	330	2%, 0207 , MF	
	R..0225	57.11.4821	820	2%, 0207 , MF	
	R..0226	57.11.4272	2.7 K	2%, 0207 , MF	
	R..0227	57.11.4470	47	2%, 0207 , MF	
	R..0228	57.11.4331	330	2%, 0207 , MF	
	R..0229	57.11.4471	470	2%, 0207 , MF	
	R..0230	57.11.4229	2.2	2%, 0207 , MF	
	R..0231	57.11.4229	2.2	2%, 0207 , MF	
	R..0232	57.11.4229	2.2	2%, 0207 , MF	
	R..0233	57.11.4229	2.2	2%, 0207 , MF	
	R..0236	57.11.4101	100	2%, 0207 , MF	
	R..0301	57.11.3114	110 K	1%, 0207 , MF	
	R..0302			not connected	
	R..0304	57.11.3752	7.5 K	1%, 0207 , MF	
	R..0305	57.11.4221	220	2%, 0207 , MF	
	R..0306	57.11.4153	15 K	2%, 0207 , MF	
	R..0307	57.11.4221	220	2%, 0207 , MF	
	R..0308	57.11.4333	33 K	2%, 0207 , MF	
	R..0309	57.11.4221	220	2%, 0207 , MF	
	R..0310	57.11.4101	100	2%, 0207 , MF	
	R..0311	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0401	57.11.3114	110 K	1%, 0207 , MF	
	R..0402			not connected	
	R..0404	57.11.3752	7.5 K	1%, 0207 , MF	
	R..0405	57.11.4221	220	2%, 0207 , MF	
	R..0406	57.11.4153	15 K	2%, 0207 , MF	
	R..0407	57.11.4221	220	2%, 0207 , MF	
	R..0408	57.11.4333	33 K	2%, 0207 , MF	
	R..0409	57.11.4221	220	2%, 0207 , MF	
	R..0410	57.11.4101	100	2%, 0207 , MF	
	R..0411	57.11.4472	4.7 K	2%, 0207 , MF	
	RA.0108	58.02.4104	100 K	20%, .1 W , PCSCH	
	RA.0206	58.02.4104	100 K	20%, .1 W , PCSCH	

STUDER (02) 87/11/15 ERASE AMPLIFIER BOARD A 1.777.560.00 PAGE 5

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	RA.0108	58.02.4104	100 K	20%, .1 W , PCSCH	
	RA.0208	58.02.4104	100 K	20%, .1 W , PCSCH	
	RT.0134	57.92.1181	180 MA	56V, PTC	
	RT.0234	57.92.1181	180 MA	56V, PTC	
	T..0101	1.022.601.00		ERASE TRANSFORMER	St
	T..0201	1.022.601.00		ERASE TRANSFORMER	St

(01) 12.08.87 Value adjust
(02) 15.11.87 PCB Revise
(03) 06.12.88 PCB Revise

MANUFACTURER: AMP=AMP Incorporated,Lo=Loupot,Nat=National,Ph=Philips
NEC=Nippon Electric Corp.,Ra=Raytheon,SGS=SGS/Ates,
Sie=Siemens,Sig=Signetics,St=Studer,To=Toshiba,Thy=Theremalloy.

ORIG 86/09/16 (01) 87/08/12 (02) 87/11/15 (03) 88/12/06

STUDER (03) 88/12/06 ERASE AMPLIFIER BOARD A PL 1.777.560.00 PAGE 6

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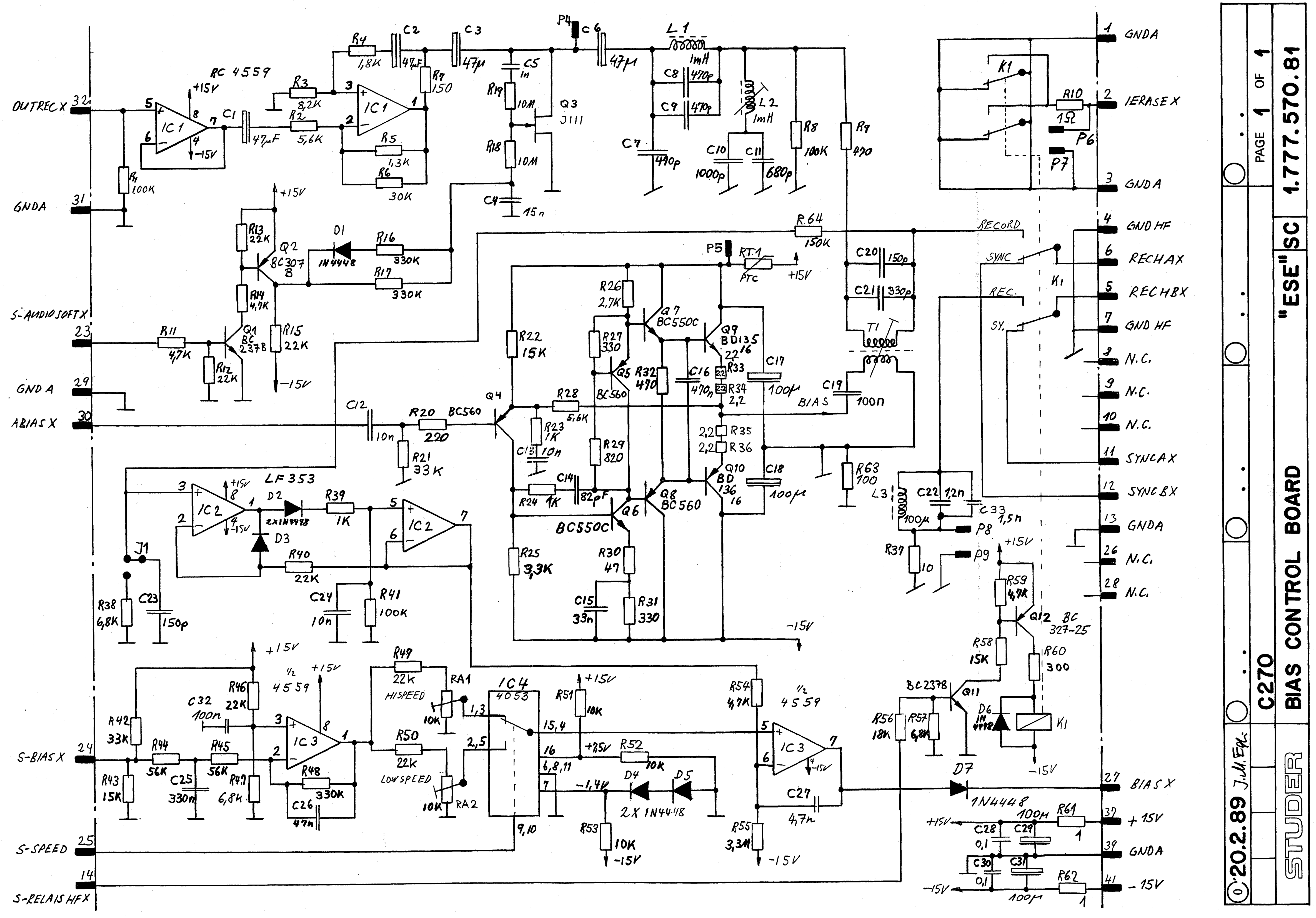
BIAS CONTROL BOARD 1.777.570.81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GNDA 31
S-AUDIOSOFTX 23
GND A 29
ABIASX 30
S-BIASX 24
S-SPEED 25
S-RELAISHFX 14
1 GNDA
2 /ERASEX
3 GNDA
4 GND HF
6 RECHAX
5 RECHBX
7 GND HF
3 N.C.
9 N.C.
10 N.C.
11 SYNCAX
12 SYNCBX
13 GNDA
26 N.C.
28 N.C.
27 BIASX
37 +15V
39 GNDA
41 -15V
RC 4559
IC1
IC2 LF353
IC3 1/2 4559
IC4 4053
Q1 BC237B
Q2 BC307B
Q3 J111
Q4 BC560
Q5 BC560
Q6 BC550C
Q7 BC550C
Q8 BC560
Q9 BD135
Q10 BD136
Q11 BC237B
Q12 BC327-25
D1 1N4448
D2 D3 2x1N4448
D4 D5 2X 1N4448
D6 1N4448
D7 1N4448
L1 1mH
L2 1mH
L3
T1
K1
RT1 PTC
RA1 HI SPEED 10K
RA2 LOW SPEED 10K
P4 P5 P6 P7 P8 P9
J1
RECORD
SYNC
REC.
SY.
BIAS
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PAGE 1 OF 1
C270
STUDER
BIAS CONTROL BOARD
"ESE" SC
1.777.570.81

Note:
Emitter Q1 connects to GND HF 1.777.570.00 to reduce record clicks change R63 to 1 ohm.
On board 1.777.570.00 emitter Q1 is on GND A resistor R63 is 100 ohms.

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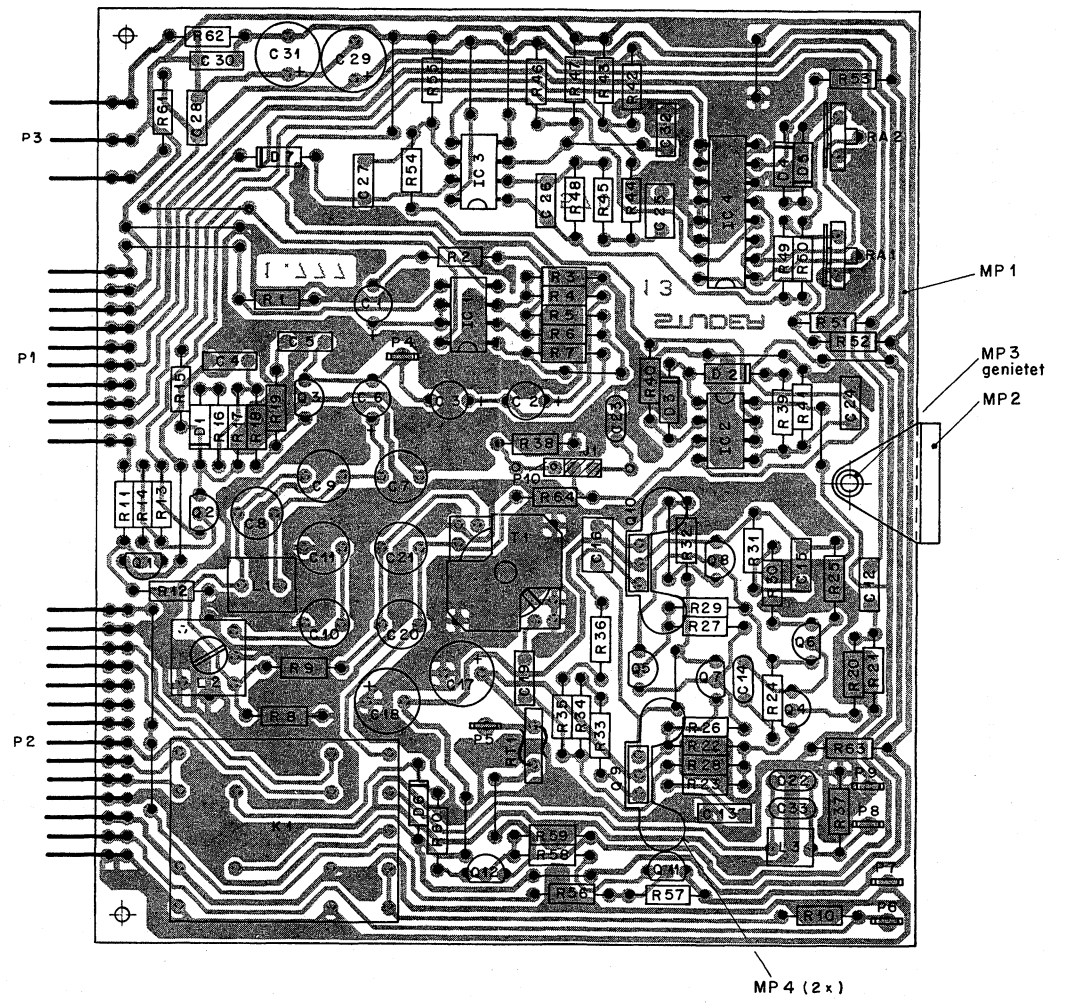
BIAS CONTROL BOARD 1.777.570.81



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.22.3470	47 U	-20%, 10V , EL	
	C..0002	59.22.3470	47 U	-20%, 10V , EL	
	C..0003	59.22.3470	47 U	-20%, 10V , EL	
(00)	C..0004	59.06.0104	.1 U	10%, 63V , PETP	
(01)	C..0004	59.06.0153	.015 U	10%, 63V , PETP	
	C..0005	59.06.0102	1000 P	10%, 63V , PETP	
	C..0006	59.22.3470	47 U	-20%, 10V , EL	
	C..0007	59.05.2471	470 P	2.5%, 630V , PP	
	C..0008	59.05.2471	470 P	2.5%, 630V , PP	
	C..0009	59.05.2471	470 P	2.5%, 630V , PP	
	C..0010	59.05.2102	1000 P	2.5%, 630V , PP	
(00)	C..0011	59.05.2681	680 P	2.5%, 630V , PP	
(02)	C..0011	59.05.2471	470 P	2.5%, 630V , PP	
	C..0012	59.06.0103	.01 U	10%, 63V , PETP	
	C..0013	59.06.0103	.01 U	10%, 63V , PETP	
	C..0014	59.34.4820	82 P	5%, N750 , CER	
	C..0015	59.06.0333	.033 U	10%, 63V , PETP	
	C..0016	59.06.0474	.47 U	10%, 63V , PETP	
	C..0017	59.22.5101	100 U	-20%, 25V , EL	
	C..0018	59.22.5101	100 U	-20%, 25V , EL	
(00)	C..0019	59.06.0105	1.0 U	10%, 50V , PETP	
(05)	C..0019	59.06.0104	.1 U	10%, 63V , PETP	
	C..0020	59.05.2151	150 P	2.5%, 630V , PP	
	C..0021	59.05.2331	330 P	2.5%, 630V , PP	
(00)	C..0022	59.34.4271	270 P	5%, N750 , CER	
(04)	C..0022	59.32.2122	1.2 N	10%, 50V , CER	
	C..0023	59.34.4151	150 P	5%, N750 , CER	
	C..0024	59.06.5103	.01 U	5%, 63V , PETP	
	C..0025	59.06.0334	.33 U	10%, 63V , PETP	
	C..0026	59.06.0473	.047 U	10%, 63V , PETP	
	C..0027	59.06.0472	4700 P	10%, 63V , PETP	
	C..0028	59.06.0104	.1 U	10%, 63V , PETP	
	C..0029	59.22.5101	100 U	-20%, 25V , EL	
	C..0030	59.06.0104	.1 U	10%, 63V , PETP	
	C..0031	59.22.5101	100 U	-20%, 25V , EL	
	C..0032	59.06.0104	.1 U	10%, 63V , PETP	
(00)	C..0033			not connected	

S T U D E R (05) 88/04/18 BIAS-CONTROL-BOARD A 1.777.570.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(04)	C..0033	59.32.4152	1.5 N	20%, 50V , CER	
	D..0001	50.04.0125		1N 4448 SI	
	D..0002	50.04.0125		1N 4448 SI	
	D..0003	50.04.0125		1N 4448 SI	
	D..0004	50.04.0125		1N 4448 SI	
	D..0005	50.04.0125		1N 4448 SI	
	D..0006	50.04.0125		1N 4448 SI	
	D..0007	50.04.0125		1N 4448 SI	
	IC.0001	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0002	50.09.0101		LF 353 N,TI 072 CP ,A	TI
	IC.0003	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0004	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	JJ.0001	54.01.0021	1 pcs	JUMPER	Bg
	K..0001	56.04.0144	24V 4*U	220V/ 2A , PRINT	Omron,Zettler
	L..0001	62.02.3102	1 M	COIL , 10%	
	L..0002	1.777.610.01		HF-COIL ,	St
(00)	L..0003	62.02.3102	1 M	COIL , 10%	
(04)	L..0003	62.02.3101	100 MK	COIL , 10%	
(00)	MP.0001	1.777.570.11		BIAS-CONTROL-PCB	St
(03)	MP.0001	1.777.570.12		BIAS-CONTROL-PCB	St
	MP.0002	1.010.001.33		GRIP	St
	MP.0003	28.21.1360	D2.25*5	TUBULARRIVET	St
	MP.0004	50.20.3003	2 pcs	HEAT SINKS To 126	St
	P..0001	54.01.0271	10 POL.	STRIP CIS ANGLE	AMP
	P..0002	54.01.0274	14 POL.	STRIP CIS ANGLE	AMP
	P..0003	54.01.0469	3 POL.	STRIP CIS ANGLE	AMP
	P..0004	54.02.0320	2.8*0.8	TEST POINT	Lo
	P..0005	54.02.0320	2.8*0.8	TEST POINT	Lo
	P..0006	54.02.0320	2.8*0.8	TEST POINT	Lo
	P..0007	54.02.0320	2.8*0.8	TEST POINT	Lo

S T U D E R (05) 88/04/18 BIAS-CONTROL-BOARD A 1.777.570.00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	P..0008	54.02.0320	2.8*0.8	TEST POINT	Lo
	P..0009	54.02.0320	2.8*0.8	TEST POINT	Lo
	P..0010	54.01.0020	3 pcs	PIN 0.63*0.63 H=5.8/3.4	Bg
	Q..0001	50.03.0436		BC 237 B	TI,Sie,Ph
	Q..0002	50.03.0515		BC 307 B ,A	TI,Sie
	Q..0003	50.03.0216		J 111 ,A	NS,Mot
	Q..0004	50.03.0496		BC 560 ,A	Sie
	Q..0005	50.03.0496		BC 560 ,A	Sie
	Q..0006	50.03.0407		BC 550 C (BC 109 C)	Sie,Ph
	Q..0007	50.03.0407		BC 550 C (BC 109 C)	Sie,Ph
	Q..0008	50.03.0496		BC 560 ,A	Sie
	Q..0009	50.03.0495		BD 135-16	Ph,SGS,To
	Q..0010	50.03.0510		BD 136-16	Ph,SGS,To
	Q..0011	50.03.0436		BC 237 B	TI,Sie,Ph
	Q..0012	50.03.0351		BC 327-25	Mot,Sie
	R..0001	57.11.4104	100 K	2%, 0207 , MF	
	R..0002	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0003	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0004	57.11.4182	1.8 K	2%, 0207 , MF	
	R..0005	57.11.3132	1.3 K	1%, 0207 , MF	
	R..0006	57.11.3303	30 K	1%, 0207 MF	
	R..0007	57.11.4151	150	2%, 0207 , MF	
	R..0008	57.11.4104	100 K	2%, 0207 , MF	
	R..0009	57.11.4471	470	2%, 0207 , MF	
	R..0010	57.11.4109	1	2%, 0207 , MF	
	R..0011	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0012	57.11.4223	22 K	2%, 0207 , MF	
	R..0013	57.11.4223	22 K	2%, 0207 , MF	
	R..0014	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0015	57.11.4223	22 K	2%, 0207 , MF	
	R..0016	57.11.4334	330 K	2%, 0207 , MF	
	R..0017	57.11.4334	330 K	2%, 0207 , MF	
	R..0018	57.11.5106	10 M	10%, 0207 , MF	
	R..0019	57.11.5106	10 M	10%, 0207 , MF	
	R..0020	57.11.4221	220	2%, 0207 , MF	

S T U D E R (05) 88/04/18 BIAS-CONTROL-BOARD A 1.777.570.00 PAGE 3

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0021	57.11.4333	33 K	2%, 0207 , MF	
	R..0022	57.11.4153	15 K	2%, 0207 , MF	
	R..0023	57.11.4102	1 K	2%, 0207 , MF	
	R..0024	57.11.4102	1 K	2%, 0207 , MF	
	R..0025	57.11.4332	3.3 K	2%, 0207 , MF	
	R..0026	57.11.4272	2.7 K	2%, 0207 , MF	
	R..0027	57.11.4331	330	2%, 0207 , MF	
	R..0028	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0029	57.11.4821	820	2%, 0207 , MF	
	R..0030	57.11.4470	47	2%, 0207 , MF	
	R..0031	57.11.4331	330	2%, 0207 , MF	
	R..0032	57.11.4471	470	2%, 0207 , MF	
	R..0033	57.11.4229	2.2	2%, 0207 , MF	
	R..0034	57.11.4229	2.2	2%, 0207 , MF	
	R..0035	57.11.4229	2.2	2%, 0207 , MF	
	R..0036	57.11.4229	2.2	2%, 0207 , MF	
	R..0037	57.11.4100	10	2%, 0207 , MF	
	R..0038	57.11.4682	6.8 K	2%, 0207 , MF	
	R..0039	57.11.4102	1 K	2%, 0207 , MF	
	R..0040	57.11.4223	22 K	2%, 0207 , MF	
	R..0041	57.11.4104	100 K	2%, 0207 , MF	
	R..0042	57.11.4333	33 K	2%, 0207 , MF	
	R..0043	57.11.4153	15 K	2%, 0207 , MF	
	R..0044	57.11.4563	56 K	2%, 0207 , MF	
	R..0045	57.11.4563	56 K	2%, 0207 , MF	
	R..0046	57.11.4223	22 K	2%, 0207 , MF	
	R..0047	57.11.4682	6.8 K	2%, 0207 , MF	
	R..0048	57.11.4334	330 K	2%, 0207 , MF	
	R..0049	57.11.4223	22 K	2%, 0207 , MF	
	R..0050	57.11.4223	22 K	2%, 0207 , MF	
	R..0051	57.11.4103	10 K	2%, 0207 , MF	
	R..0052	57.11.4103	10 K	2%, 0207 , MF	
	R..0053	57.11.4103	10 K	2%, 0207 , MF	
	R..0054	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0055	57.11.5335	3.3 M	5%, 0207 , MF	
	R..0056	57.11.4183	18 K	2%, 0207 , MF	
	R..0057	57.11.4682	6.8 K	2%, 0207 , MF	

S T U D E R (05) 88/04/18 BIAS-CONTROL-BOARD A 1.777.570.00 PAGE 4

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0058	57.11.4153	15 K	2%, 0207 , MF	
	R..0059	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0060	57.11.3301	300	1%, 0207 , MF	
	R..0061	57.11.4109	1	2%, 0207 , MF	
	R..0062	57.11.4109	1	2%, 0207 , MF	
(00)	R..0063	57.11.4101	100	2%, 0207 , MF	
(06)	R..0063	57.11.4109	1	2%, 0207 , MF	
	R..0064	57.11.4154	150 K	2%, 0207 , MF	
	RA.0001	58.02.4103	10 K	20%, .1 W , PCSCH	
	RA.0002	58.02.4103	10 K	20%, .1 W , PCSCH	
	RT.0001	57.92.1181	180 MA	56V, PTC	
	T..0001	1.022.600.00		BIAS TRANSFORMER	St

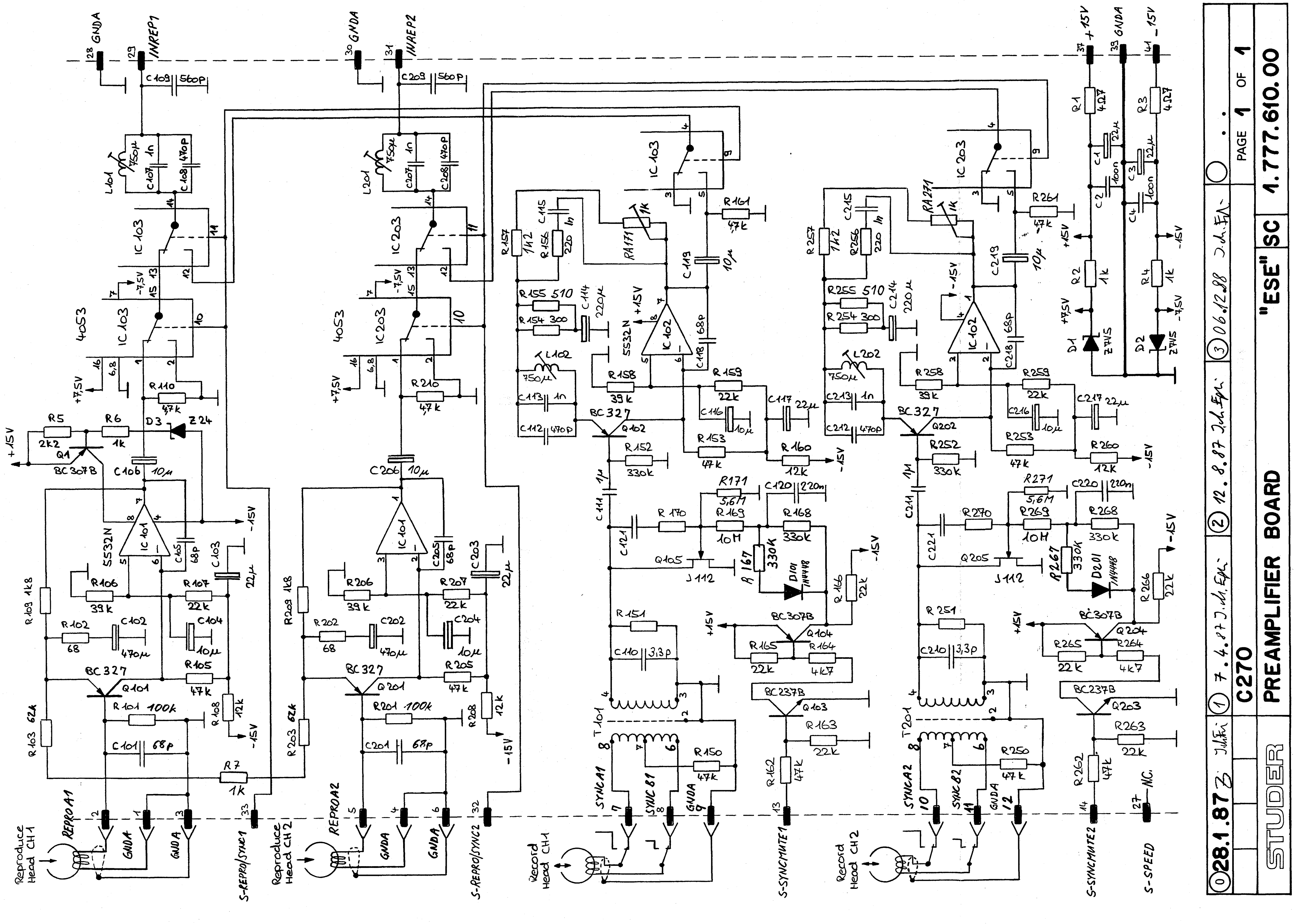
(01) 07.04.87 SW Adaptation
(02) 12.08.87 Value adjust
(03) 15.11.87 PCB Revise
(04) 27.01.88 Value adjust
(05) 18.04.88 Value adjust
(06) 06.12.88 Value adjust

MANUFACTURER: AMP=AMP Incorporated,Mot=Motorola,NEC=Nippon Electric Corp.,
NS=National Semiconductors,Ph=Philips,Ra=Raytheon,SGS=SGS/Ates,
Sie=Siemens,St=Studer,TI=Texas Instrument,To=Toshiba,
Lo=Loupot,Bg=Berg.

ORIG 86/09/16 (01) 87/04/07 (02) 87/08/12 (03) 87/11/15 (04) 88/01/27
(05) 88/04/18 (06) 88/12/06

S T U D E R (06) 88/12/06 BIAS-CONTROL-BOARD A PL 1.777.570.00 PAGE 5

PREAMPLIFIER BOARD 1.777.610.00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31 INREP2
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33 GNDA
41 -15V
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C209 560P
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C107 1n
C108 470P
L201 750μ
C207 1n
C208 470P
IC103
IC203
4053
-7,5V
+7,5V
R110 47k
R210 47k
R5 2k2
R6 1k
D3 Z24
Q1 BC307B
C106 10μ
C206 10μ
IC101 5532N
IC104
C105 68p
C205 68p
C103 22μ
C203 22μ
R106 39k
R206 39k
R107 22k
R207 22k
R109 1k8
R209 1k8
R102 68
R202 68
C102 470μ
C202 470μ
C104 10μ
C204 10μ
R105 47k
R205 47k
Q101 BC327
Q201 BC327
R101 100k
R201 100k
R108 12k
R208 12k
R103 62k
R203 62k
C101 68p
C201 68p
R7 1k
REPRO A1
REPRO A2
GNDA
Reproduce Head CH1
Reproduce Head CH2
S-REPRO/SYNC1
S-REPRO/SYNC2
R157 1k2
R156 220
C115 1n
RA171 1k
R161 47k
C119 10μ
R155 510
R154 300
C114 220μ
IC102 5532N
C118 68p
L102 750μ
C113 1n
C112 470p
R158 39k
R159 22k
C116 10μ
C117 22μ
Q102 BC327
R153 47k
R160 12k
R152 330k
C111 1μ
R171 5,6M
C120 220n
R170
R169 10M
R168 330k
C121
Q105 J112
R167 330k
D101 1N4148
R166 22k
R151
C110 3,3p
Q104 BC307B
R165 22k
R164 4k7
Q103 BC237B
R163 22k
T101
R150 47k
R162 47k
SYNC A1
SYNC B1
Record Head CH1
S-SYNCMUTE1
R257 1k2
R256 220
C215 1n
RA271 1k
R261 47k
C219 10μ
R255 510
R254 300
C214 220μ
C218 68p
L202 750μ
C213 1n
C212 470p
R258 39k
R259 22k
C216 10μ
C217 22μ
Q202 BC327
R253 47k
R260 12k
R252 330k
C211 1μ
R271 5,6M
C220 220n
R270
R269 10M
R268 330k
C221
Q205 J112
R267 330k
D201 1N4148
R266 22k
R251
C210 3,3p
Q204 BC307B
R265 22k
R264 4k7
Q203 BC237B
R263 22k
T201
R250 47k
R262 47k
SYNC A2
SYNC B2
Record Head CH2
S-SYNCMUTE2
27 NC.
S-SPEED
R1 4Ω7
R3 4Ω7
C1 100n
C2 22μ
C3 100n
C4 22μ
R2 1k
R4 1k
D1 Z7V5
D2 Z7V5
+15V
-15V
+7,5V
-7,5V
0 28.1.87 Z. Jähi
1 7.4.87 J.M. Ep.
2 12.8.87 J.M. Ep.
3 06.12.88 J.M. Ep.
PAGE 1 OF 1
C270
PREAMPLIFIER BOARD
"ESE" SC
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Note:
C111 and C211 have been reduced to 1μF and resistors R171 and R271 added, each 5,6Mohms to reduce start/stop clicks.

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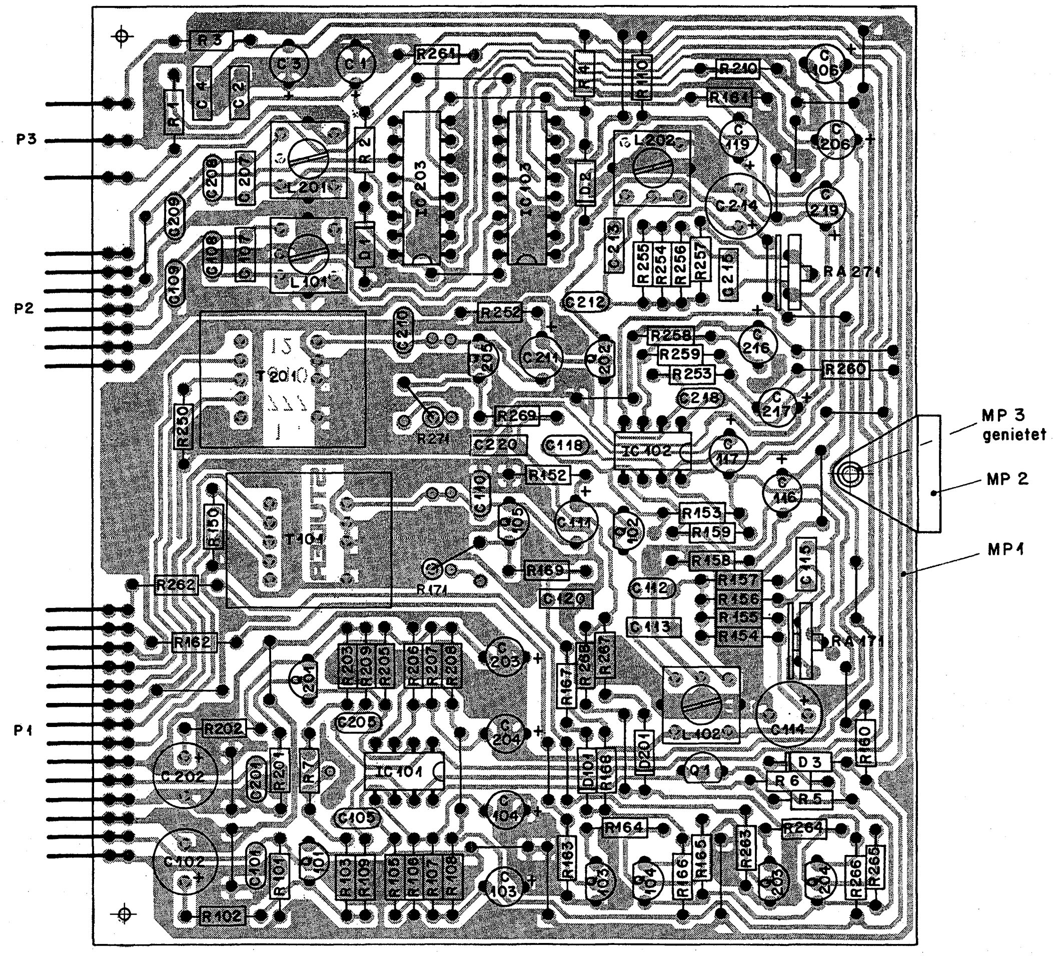

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.22.5220	22 U	-20%, 25V , EL	
	C..0002	59.06.0104	.1 U	10%, 63V , PETP	
	C..0003	59.22.5220	22 U	-20%, 25V , EL	
	C..0004	59.06.0104	.1 U	10%, 63V , PETP	
	C..0101	59.34.4680	68 P	5%, N750 , CER	
	C..0102	59.22.3471	470 U	-20%, 10V , EL	
	C..0103	59.22.5220	22 U	-20%, 25V , EL	
	C..0104	59.22.6100	10 U	-20%, 40V , EL	
	C..0105	59.34.4680	68 P	5%, N750 , CER	
(00)	C..0106	59.22.3470	47 U	-20%, 10V , EL	
(01)	C..0106	59.22.6100	10 U	-20%, 35V , EL	
	C..0107	59.06.5102	1000 P	5%, 63V , PETP	
	C..0108	59.34.5471	470 P	5%,N1500 , CER	
	C..0109	59.34.5561	560 P	5%,N1500 , CER	
	C..0110	59.34.0339	3.3 P	5%, P100 , CER	
(00)	C..0111	59.22.4101	100 U	-20%, 16V , EL	
(04)	C..0111	59.06.0105	1 U	10%, 50V , PETP	
	C..0112	59.34.5471	470 P	5%,N1500 , CER	
	C..0113	59.06.5102	1000 P	5%, 63V , PETP	
	C..0114	59.22.3221	220 U	-20%, 10V , EL	
	C..0115	59.06.5102	1000 P	5%, 63V , PETP	
	C..0116	59.22.6100	10 U	-20%, 40V , EL	
	C..0117	59.22.5220	22 U	-20%, 25V , EL	
	C..0118	59.34.4680	68 P	5%, N750 , CER	
(00)	C..0119	59.22.3470	47 U	-20%, 10V , EL	
(01)	C..0119	59.22.6100	10 U	-20%, 35V , EL	
(00)	C..0120	59.06.5104	.1 U	5%, 63V , PETP	
(01)	C..0120	59.06.5224	.22 U	5%, 63V , PETP	
(00)	C..0121	59.06.5102	1000 P	5%, 63V , PETP	
(01)	C..0121			not connected	
	C..0201	59.34.4680	68 P	5%, N750 , CER	
	C..0202	59.22.3471	470 U	-20%, 10V , EL	
	C..0203	59.22.5220	22 U	-20%, 25V , EL	
	C..0204	59.22.6100	10 U	-20%, 40V , EL	
	C..0205	59.34.4680	68 P	5%, N750 , CER	
(00)	C..0206	59.22.3470	47 U	-20%, 10V , EL	
(01)	C..0206	59.22.6100	10 U	-20%, 35V , EL	

S T U D E R (04) 88/12/06 PREAMPLIFIER-BOARD A PL 1.777.610.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0207	59.06.5102	1000 P	5%, 63V , PETP	
	C..0208	59.34.5471	470 P	5%,N1500 , CER	
	C..0209	59.34.5561	560 P	5%,N1500 , CER	
	C..0210	59.34.0339	3.3 P	5%, P100 , CER	
(00)	C..0211	59.22.4101	100 U	-20%, 16V , EL	
(04)	C..0211	59.06.0105	1 U	10%, 50V , PETP	
	C..0212	59.34.5471	470 P	5%,N1500 , CER	
	C..0213	59.06.5102	1000 P	5%, 63V , PETP	
	C..0214	59.22.3221	220 U	-20%, 10V , EL	
	C..0215	59.06.5102	1000 P	5%, 63V , PETP	
	C..0216	59.22.6100	10 U	-20%, 40V , EL	
	C..0217	59.22.5220	22 U	-20%, 25V , EL	
	C..0218	59.34.4680	68 P	5%, N750 , CER	
(00)	C..0219	59.22.3470	47 U	-20%, 10V , EL	
(01)	C..0219	59.22.6100	10 U	-20%, 35V , EL	
(00)	C..0220	59.06.5104	.1 U	5%, 63V , PETP	
(01)	C..0220	59.06.5224	.22 U	5%, 63V , PETP	
(00)	C..0221	59.06.5102	1000 P	5%, 63V , PETP	
(01)	C..0221			not connected	
	D..0001	50.04.1103	7.5V	5%, .40W, Z	ITT,Mot
	D..0002	50.04.1103	7.5V	5%, .40W, Z	
	D..0003	50.04.1121	24 V	5%, .40W, Z	
	D..0101	50.04.0125		1N 4448 SI	
	D..0201	50.04.0125		1N 4448 SI	
	IC.0101	50.09.0105		NE 5532 N	Sig
	IC.0102	50.09.0105		NE 5532 N	Sig
	IC.0103	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	IC.0203	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	L..0101	1.777.610.01		HF-COIL	St
	L..0102	1.777.610.01		HF-COIL	St
	L..0201	1.777.610.01		HF-COIL	St
	L..0202	1.777.610.01		HF-COIL	St
(00)	MP.0001	1.777.610.11		PREAMPLIFIER-PCB	St

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(03)	MP.0001	1.777.610.12		PREAMPLIFIER-PCB	St
	MP.0002	1.010.001.33		GRIP	St
	MP.0003	28.21.1360	D2.25*5	TABULARRIVET	St
	P..0001	54.01.0274	14 POL.	STRIP CIS ANGLE	AMP
	P..0002	54.01.0223	7 POL.	STRIP CIS ANGLE	AMP
	P..0003	54.01.0469	3 POL.	STRIP CIS ANGLE	AMP
	Q..0001	50.03.0515		BC 307 , BC 557 B	ITT,Ph
	Q..0101	50.03.0625		BC 327 E 6310 ,A	Sie
	Q..0102	50.03.0625		BC 327 E 6310 ,A	Sie
	Q..0103	50.03.0436		BC 237 B , BC 547 B	Sie,Ph
	Q..0104	50.03.0515		BC 307 , BC 557 B	ITT,Ph
(00)	Q..0105	50.03.0216		J 111 ,A	NS,Mot
(01)	Q..0105	50.03.0350		J 112 ,A	NS,Mot
	Q..0201	50.03.0625		BC 327 E 6310 ,A	Sie
	Q..0202	50.03.0625		BC 327 E 6310 ,A	Sie
	Q..0203	50.03.0436		BC 237 B , BC 547 B	Sie,Ph
	Q..0204	50.03.0515		BC 307 , BC 557 B	ITT,Ph
(00)	Q..0205	50.03.0216		J 111 ,A	NS,Mot
(01)	Q..0205	50.03.0350		J 112 ,A	NS,Mot
	R..0001	57.11.4479	4.7	2%, 0207 , MF	
	R..0002	57.11.4102	1 K	2%, 0207 , MF	
	R..0003	57.11.4479	4.7	2%, 0207 , MF	
	R..0004	57.11.4102	1 K	2%, 0207 , MF	
	R..0005	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0006	57.11.4102	1 K	2%, 0207 , MF	
	R..0007	57.11.4102	1 K	2%, 0207 , MF	
	R..0101	57.11.4104	100 K	2%, 0207 , MF	
	R..0102	57.11.4680	68	2%, 0207 , MF	
	R..0103	57.11.3623	62 K	1%, 0207 , MF	
	R..0105	57.11.4473	47 K	2%, 0207 , MF	
	R..0106	57.11.4393	39 K	2%, 0207 , MF	
	R..0107	57.11.4223	22 K	2%, 0207 , MF	
	R..0108	57.11.4123	12 K	2%, 0207 , MF	
	R..0109	57.11.4182	1.8 K	2%, 0207 , MF	

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IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(00)	R..0110	57.11.4473	47 K	2%, 0207 , MF	
(01)	R..0110	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0150	57.11.4473	47 K	2%, 0207 , MF	
	R..0151			not connected	
	R..0152	57.11.4334	330 K	2%, 0207 , MF	
	R..0153	57.11.4473	47 K	2%, 0207 , MF	
	R..0154	57.11.3301	300	1%, 0207 , MF	
	R..0155	57.11.3511	510	1%, 0207 , MF	
	R..0156	57.11.4221	220	2%, 0207 , MF	
(00)	R..0157	57.11.4182	1.8 K	2%, 0207 , MF	
(02)	R..0157	57.11.4122	1.2 K	2%, 0207 , MF	
	R..0158	57.11.4393	39 K	2%, 0207 , MF	
	R..0159	57.11.4223	22 K	2%, 0207 , MF	
	R..0160	57.11.4123	12 K	2%, 0207 , MF	
(00)	R..0161	57.11.4473	47 K	2%, 0207 , MF	
(01)	R..0161	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0162	57.11.4473	47 K	2%, 0207 , MF	
	R..0163	57.11.4223	22 K	2%, 0207 , MF	
	R..0164	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0165	57.11.4223	22 K	2%, 0207 , MF	
	R..0166	57.11.4223	22 K	2%, 0207 , MF	
	R..0167	57.11.4334	330 K	2%, 0207 , MF	
	R..0168	57.11.4334	330 K	2%, 0207 , MF	
	R..0169	57.11.5106	10 M	5%, 0207 , MF	
(00)	R..0170	57.11.5106	10 M	5%, 0207 , MF	
(01)	R..0170			not connected	
(04)	R..0171	57.11.5565	5.6 M	5%, 0207 , MF	
	R..0201	57.11.4104	100 K	2%, 0207 , MF	
	R..0202	57.11.4680	68	2%, 0207 , MF	
	R..0203	57.11.3623	62 K	1%, 0207 , MF	
	R..0205	57.11.4473	47 K	2%, 0207 , MF	
	R..0206	57.11.4393	39 K	2%, 0207 , MF	
	R..0207	57.11.4223	22 K	2%, 0207 , MF	
	R..0208	57.11.4123	12 K	2%, 0207 , MF	
	R..0209	57.11.4182	1.8 K	2%, 0207 , MF	
(00)	R..0210	57.11.4473	47 K	2%, 0207 , MF	
(01)	R..0210	57.11.4472	4.7 K	2%, 0207 , MF	

S T U D E R (04) 88/12/06 PREAMPLIFIER-BOARD A PL 1.777.610.00 PAGE 4

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0250	57.11.4473	47 K	2%, 0207 , MF	
	R..0251			not connected	
	R..0252	57.11.4334	330 K	2%, 0207 , MF	
	R..0253	57.11.4473	47 K	2%, 0207 , MF	
	R..0254	57.11.3301	300	1%, 0207 , MF	
	R..0255	57.11.3511	510	1%, 0207 , MF	
	R..0256	57.11.4221	220	2%, 0207 , MF	
(00)	R..0257	57.11.4182	1.8 K	2%, 0207 , MF	
(02)	R..0257	57.11.4122	1.2 K	2%, 0207 , MF	
	R..0258	57.11.4393	39 K	2%, 0207 , MF	
	R..0259	57.11.4223	22 K	2%, 0207 , MF	
	R..0260	57.11.4123	12 K	2%, 0207 , MF	
(00)	R..0261	57.11.4473	47 K	2%, 0207 , MF	
(01)	R..0261	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0262	57.11.4473	47 K	2%, 0207 , MF	
	R..0263	57.11.4223	22 K	2%, 0207 , MF	
	R..0264	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0265	57.11.4223	22 K	2%, 0207 , MF	
	R..0266	57.11.4223	22 K	2%, 0207 , MF	
	R..0267	57.11.4334	330 K	2%, 0207 , MF	
	R..0268	57.11.4334	330 K	2%, 0207 , MF	
	R..0269	57.11.5106	10 M	5%, 0207 , MF	
(00)	R..0270	57.11.5106	10 M	5%, 0207 , MF	
(01)	R..0270			not connected	
(04)	R..0271	57.11.5565	5.6 M	5%, 0207 , MF	
	RA.0171	58.02.4102	1 K	20%, .1 W , PCSCH	
	RA.0271	58.02.4102	1 K	20%, .1 W , PCSCH	
	T..0101	1.022.402.00	1:10	INPUT TRANSFORMER	St
	T..0201	1.022.402.00	1:10	INPUT TRANSFORMER	St

S T U D E R (04) 88/12/06 PREAMPLIFIER-BOARD A PL 1.777.610.00 PAGE 5

IND. POS.NO. PART NO. VALUE SPECIFICATIONS / EQUIVALENT MANUF.

(01) 07.04.87 SW Adaptation
(02) 12.08.87 Value adjust
(03) 15.11.87 PCB Revise
(04) 06.12.88 Value adjust

MANUFACTURER: AMP=AMP Incorporated,ITT=Intermetall,Mot=Motorola,Ph=Philips,
NS=National Semiconductors,Sig=Signetics,Sie=Siemens,St=Studer.

ORIG 86/09/16 (01) 87/04/07 (02) 87/08/12 (03) 87/11/15 (04) 88/12/06

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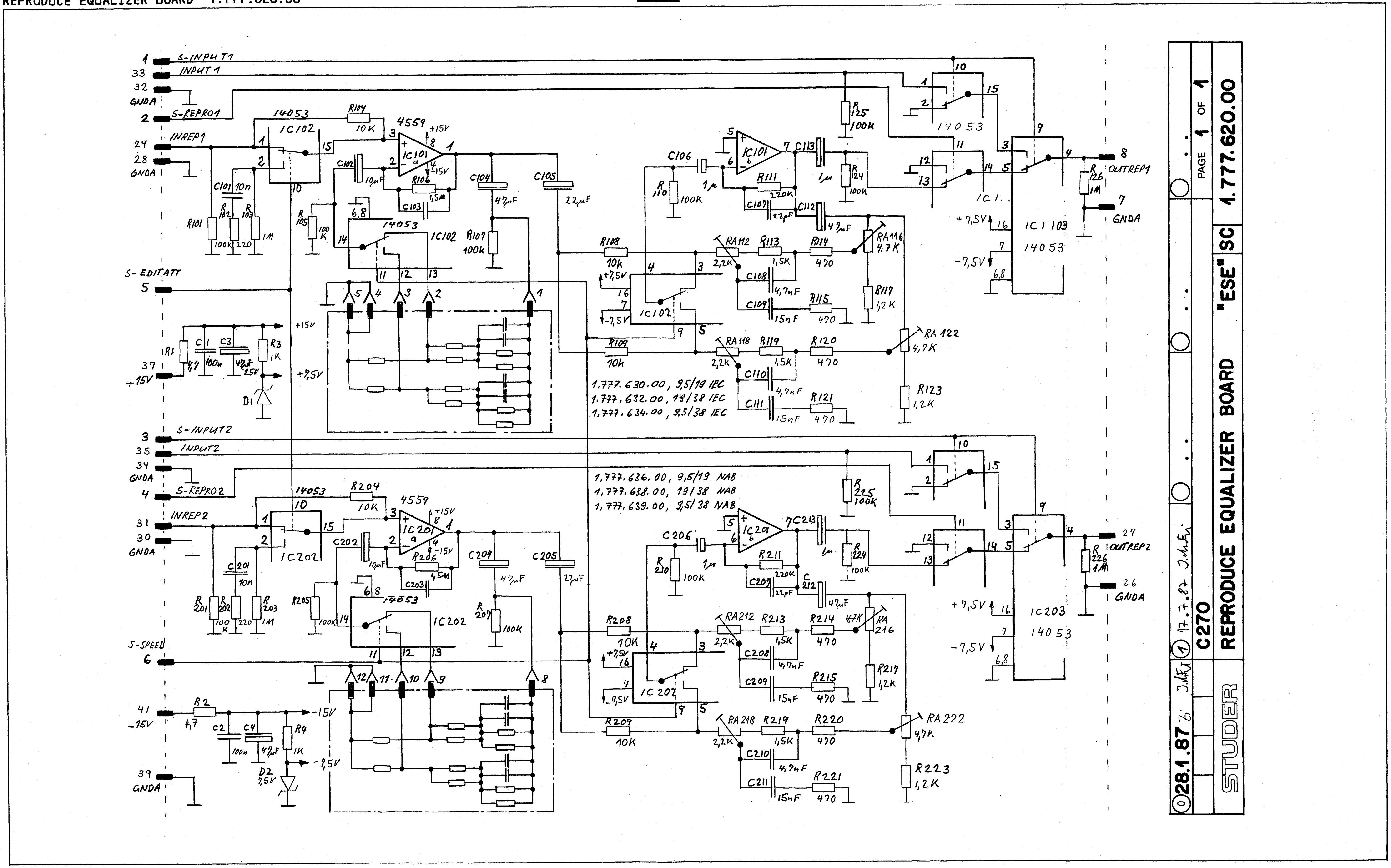
REPRODUCE EQUALIZER BOARD 1.777.620.00


1 S-INPUT1
33 INPUT1
32 GNDA
2 S-REPRO1
29 INREP1
28 GNDA
5 S-EDITATT
37 +15V
3 S-INPUT2
35 INPUT2
34 GNDA
4 S-REPRO2
31 INREP2
30 GNDA
6 S-SPEED
41 -15V
39 GNDA
IC102 14053
IC101a 4559
IC101b
IC103 14053
IC202 14053
IC201a 4559
IC201b
IC203 14053
R104 10K
R106 1,5M
R101 100k
R102 220
R103 1M
C101 10n
C102 10µF
C103
R105 100K
R107 100k
C104 47µF
C105 22µF
R1 4,7
C1 100n
C3 47µF 25V
R3 1K
D1
+15V
+7,5V
R108 10k
R109 10k
R110 100K
C106 1µ
R111 220K
C107 22pF
C112 47µF
C113 1µ
R124 100K
R125 100K
R126 1M
RA112 2,2K
R113 1,5K
R114 470
RA116 4,7K
R117 1,2K
C108 4,7nF
C109 15nF
R115 470
RA118 2,2K
R119 1,5K
R120 470
RA122 4,7K
R123 1,2K
C110 4,7nF
C111 15nF
R121 470
1.777.630.00, 9,5/19 IEC
1.777.632.00, 19/38 IEC
1.777.634.00, 9,5/38 IEC
8 OUTREP1
7 GNDA
+7,5V
-7,5V
R204 10K
R206 4,5M
R201 100K
R202 220
R203 1M
C201 10n
C202 10µF
C203
R205 100K
R207 100k
C204 47µF
C205 22µF
1.777.636.00, 9,5/19 NAB
1.777.638.00, 19/38 NAB
1.777.639.00, 9,5/38 NAB
C206 1µ
R210 100K
R211 220K
C207 22pF
C212 47µF
C213 1µ
R224 100K
R225 100K
R226 1M
R208 10K
R209 10K
RA212 2,2K
R213 1,5K
R214 470
RA216 4,7K
R217 1,2K
C208 4,7nF
C209 15nF
R215 470
RA218 2,2K
R219 1,5K
R220 470
RA222 4,7K
R223 1,2K
C210 4,7nF
C211 15nF
R221 470
27 OUTREP2
26 GNDA
R2 4,7
C2 100n
C4 47µF
R4 1K
D2 7,5V
-15V
-7,5V
0 28.1.87
1 17.7.87
C270
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REPRODUCE EQUALIZER BOARD
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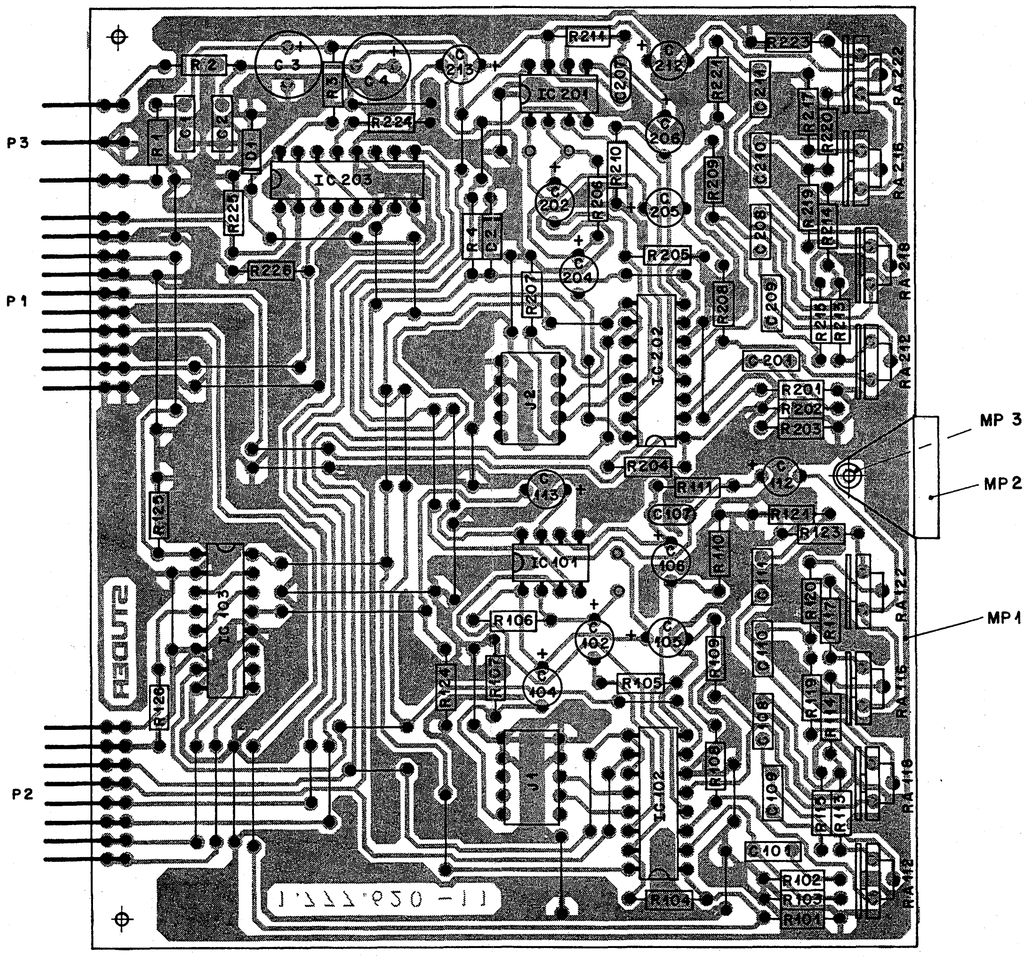
REPRODUCE EQUALIZER BOARD 1.777.620.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.06.0104	.1 U	10%, 63V , PETP	
	C..0002	59.06.0104	.1 U	10%, 63V , PETP	
	C..0003	59.22.5470	47 U	-20%, 25V , EL	
	C..0004	59.22.5470	47 U	-20%, 25V , EL	
	C..0101	59.06.5103	01 U	5%, 63V , PETP	
	C..0102	59.22.6100	10 U	-20%, 40V , EL	
	C..0103			not connected	
	C..0104	59.22.3470	47 U	-20%, 10V , EL	
	C..0105	59.22.5220	22 U	-20%, 25V , EL	
(00)	C..0106	59.22.6100	10 U	-20%, 40V , EL	
(01)	C..0106	59.22.8109	1 U	-20%, 63V , EL	
	C..0107	59.34.2220	22 P	5%, N150 , CER	
	C..0108	59.06.5472	4700 P	5%, 63V , PETP	
	C..0109	59.06.5153	.015 U	5%, 63V , PETP	
	C..0110	59.06.5472	4700 P	5%, 63V , PETP	
	C..0111	59.06.5153	.015 U	5%, 63V , PETP	
	C..0112	59.22.3470	47 U	-20%, 10V , EL	
(00)	C..0113	59.22.6100	10 U	-20%, 40V , EL	
(01)	C..0113	59.22.8109	1 U	-20%, 63V , EL	
	C..0201	59.06.5103	.01 U	5%, 63V , PETP	
	C..0202	59.22.6100	10 U	-20%, 40V , EL	
	C..0203			not connected	
	C..0204	59.22.3470	47 U	-20%, 10V , EL	
	C..0205	59.22.5220	22 U	-20%, 25V , EL	
(00)	C..0206	59.22.6100	10 U	-20%, 40V , EL	
(01)	C..0206	59.22.8109	1 U	-20%, 63V , EL	
	C..0207	59.34.2220	22 P	5%, N150 , CER	
	C..0208	59.06.5472	4700 P	5%, 63V , PETP	
	C..0209	59.06.5153	.015 U	5%, 63V , PETP	
	C..0210	59.06.5472	4700 P	5%, 63V , PETP	
	C..0211	59.06.5153	.015 U	5%, 63V , PETP	
	C..0212	59.22.3470	47 U	-20%, 10V , EL	
(00)	C..0213	59.22.6100	10 U	-20%, 40V , EL	
(01)	C..0213	59.22.8109	1 U	-20%, 63V , EL	
	D..0001	50.04.1103	7.5V	5%, .40W, Z	ITT,Mot,Ph
	D..0002	50.04.1103	7.5V	5%, .40W, Z	

S T U D E R (01) 87/04/07 REPRO. EQUALIZER BOARD A 1.777.620.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	IC.0101	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0102	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	IC.0103	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	IC.0201	50.09.0107		RC 4559 NB, UPC 4559	Ra,NEC
	IC.0202	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	IC.0203	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	J..0001	54.01.0305	5 POL.	STRIP CIS PARLEL	AMP
	J..0002	54.01.0305	5 POL.	STRIP CIS PARLEL	
	MP.0001	1.777.620.11		PLAYBACK EQUALIZER PCB	St
	MP.0002	1.010.001.33		GRIP	
	MP.0003	28.21.1360	D2.25*5	TUBULARRIVET	St
	P..0001	54.01.0271	10 POL.	STRIP CIS ANGLE	
	P..0002	54.01.0270	8 POL.	STRIP CIS ANGLE	
	P..0003	54.01.0469	3 POL.	STRIP CIS ANGLE	
	R..0001	57.11.4479	4.7	2%, 0207 , MF	
	R..0002	57.11.4479	4.7	2%, 0207 , MF	
	R..0003	57.11.4102	1 K	2%, 0207 , MF	
	R..0004	57.11.4102	1 K	2%, 0207 , MF	
	R..0101	57.11.4104	100 K	2%, 0207 , MF	
	R..0102	57.11.4221	220	2%, 0207 , MF	
	R..0103	57.11.4105	1 M	5%, 0207 , MF	
	R..0104	57.11.4103	10 K	2%, 0207 , MF	
	R..0105	57.11.4104	100 K	2%, 0207 , MF	
	R..0106	57.11.4155	1.5 M	5%, 0207 , MF	
	R..0107	57.11.4104	100 K	2%, 0207 , MF	
	R..0108	57.11.4153	15 K	2%, 0207 , MF	
	R..0109	57.11.4153	15 K	2%, 0207 , MF	
	R..0110	57.11.4104	100 K	2%, 0207 , MF	
	R..0111	57.11.4224	220 K	2%, 0207 , MF	
	R..0113	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0114	57.11.4471	470	2%, 0207 , MF	
	R..0115	57.11.4471	470	2%, 0207 , MF	
	R..0117	57.11.4122	1.2 K	2%, 0207 , MF	

S T U D E R (01) 87/04/07 REPRO. EQUALIZER BOARD A 1.777.620.00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0119	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0120	57.11.4471	470	2%, 0207 , MF	
	R..0121	57.11.4471	470	2%, 0207 , MF	
	R..0123	57.11.4122	1.2 K	2%, 0207 , MF	
	R..0124	57.11.4104	100 K	2%, 0207 , MF	
	R..0125	57.11.4104	100 K	2%, 0207 , MF	
	R..0126	57.11.4105	1 M	5%, 0207 , MF	
	R..0201	57.11.4104	100 K	2%, 0207 , MF	
	R..0202	57.11.4221	220	2%, 0207 , MF	
	R..0203	57.11.4105	1 M	5%, 0207 , MF	
	R..0204	57.11.4103	10 K	2%, 0207 , MF	
	R..0205	57.11.4104	100 K	2%, 0207 , MF	
	R..0206	57.11.4155	1.5 M	5%, 0207 , MF	
	R..0207	57.11.4104	100 K	2%, 0207 , MF	
	R..0208	57.11.4153	15 K	2%, 0207 , MF	
	R..0209	57.11.4153	15 K	2%, 0207 , MF	
	R..0210	57.11.4104	100 K	2%, 0207 , MF	
	R..0211	57.11.4224	220 K	2%, 0207 , MF	
	R..0213	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0214	57.11.4471	470	2%, 0207 , MF	
	R..0215	57.11.4471	470	2%, 0207 , MF	
	R..0217	57.11.4122	1.2 K	2%, 0207 , MF	
	R..0219	57.11.4152	1.5 K	2%, 0207 , MF	
	R..0220	57.11.4471	470	2%, 0207 , MF	
	R..0221	57.11.4471	470	2%, 0207 , MF	
	R..0223	57.11.4122	1.2 K	2%, 0207 , MF	
	R..0224	57.11.4104	100 K	2%, 0207 , MF	
	R..0225	57.11.4104	100 K	2%, 0207 , MF	
	R..0226	57.11.4105	1 M	5%, 0207 , MF	
	RA.0112	58.02.4222	2.2 K	20%, .1 W , PCSCH	
	RA.0116	58.02.4472	4.7 K	20%, .1 W , PCSCH	
	RA.0118	58.02.4222	2.2 K	20%, .1 W , PCSCH	
	RA.0122	58.02.4472	4.7 K	20%, .1 W , PCSCH	
	RA.0212	58.02.4222	2.2 K	20%, .1 W , PCSCH	
	RA.0216	58.02.4472	4.7 K	20%, .1 W , PCSCH	
	RA.0218	58.02.4222	2.2 K	20%, .1 W , PCSCH	

S T U D E R (01) 87/04/07 REPRO. EQUALIZER BOARD A 1.777.620.00 PAGE 3

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	RA.0222	58.02.4472	4.7 K	20%, .1 W , PCSCH	

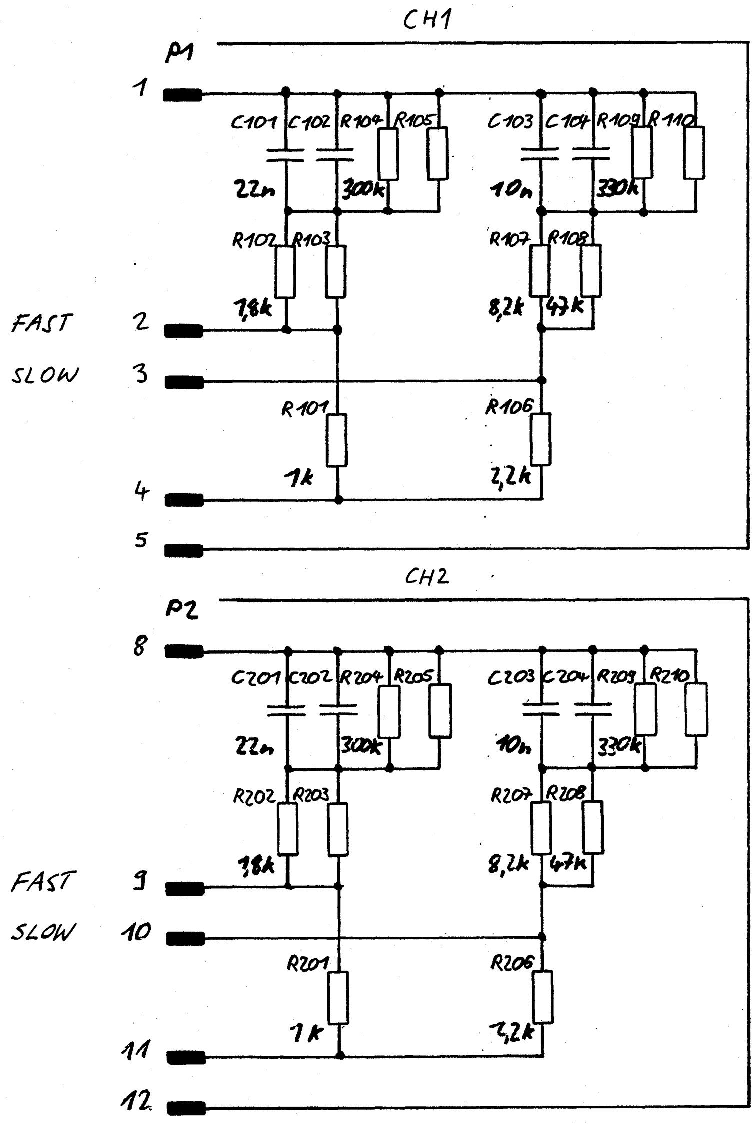
(01) 07.04.87 SW Adaptation

MANUFACTURER: AMP=AMP Incorporated,ITT=Intermetall,Mot=Motorola,Ph=Philips,
NEC=Nippon Electic Corp.,NS=National Semiconductors,
Ra=Raytheon,St=Studer.

ORIG 86/09/16 (01) 87/04/07

S T U D E R (01) 87/04/07 REPRO. EQUALIZER BOARD A 1.777.620.00 PAGE 4

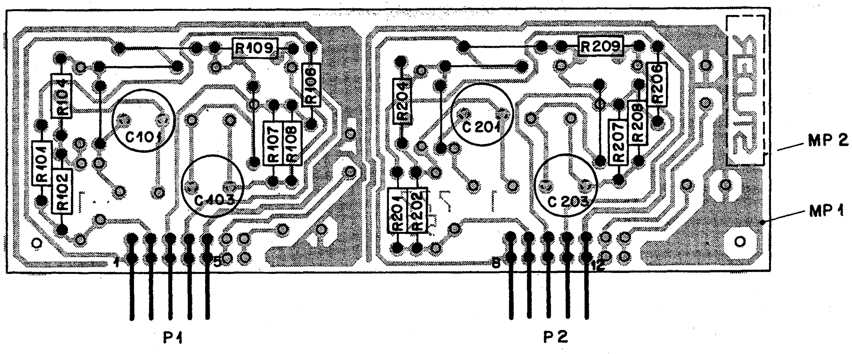
REPRO SPEED BOARD 9.5/19 IEC 1.777.630.00


CH1
P1
1
C101
C102
R104
R105
C103
C104
R109
R110
22n
300k
10n
330k
R102
R103
R107
R108
1,8k
8,2k
4,7k
FAST
2
SLOW
3
R101
R106
1k
2,2k
4
5
CH2
P2
8
C201
C202
R204
R205
C203
C204
R209
R210
22n
300k
10n
330k
R202
R203
R207
R208
1,8k
8,2k
4,7k
FAST
9
SLOW
10
R201
R206
1k
2,2k
11
12

Note:
Components with no value indication are not installed.

⓪ 14.2.87 3· Fu	○ . .	○ . .	○ . .	○ . .
	C270			PAGE 1 OF 1
STUDER	REPRO SPEED B. 9.5 / 19 IEC (3,75/7,5)		SC	1.777.630.00

REPRO SPEED BOARD 9.5/19 IEC 1.777.630.00

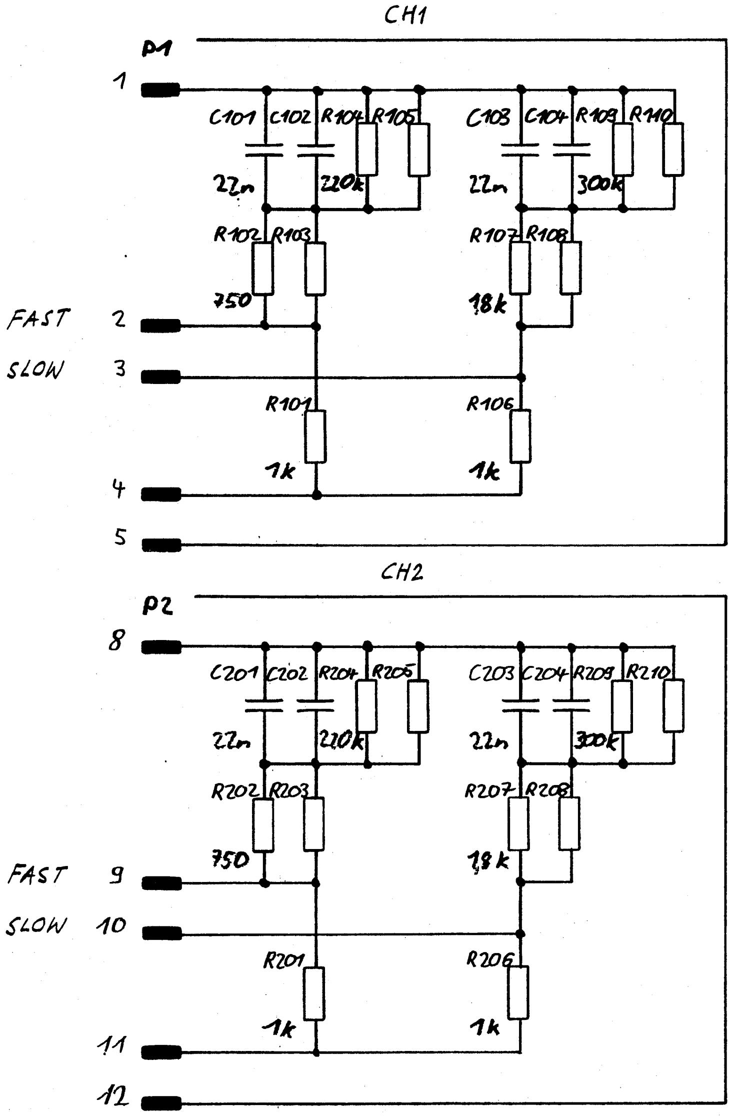

R109
R104
R101
R102
C101
C103
R107
R108
R106
R209
R204
R201
R202
C201
C203
R207
R208
R206
1
5
8
12
P1
P2
MP 2
MP 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0101	59.05.2223	.022 U	2.5%, 63V , PP	
	C..0103	59.05.2103	.01 U	2.5%, 63V , PP	
	C..0201	59.05.2223	.022 U	2.5%, 63V , PP	
	C..0203	59.05.2103	.01 U	2.5%, 63V , PP	
	MP.0001	1.777.550.11		REPRO. SPEED BOARD PCB	
	MP.0002	1.777.630.01		Label	
	P..0001	54.01.0269	5 POL.	STRIP CIS	
	P..0002	54.01.0269	5 POL.	STRIP CIS	
	R..0101	57.11.3102	1 K	1%, 0207 , MF	
	R..0102	57.11.3182	1.8 K	1%, 0207 , MF	
	R..0104	57.11.3304	300 K	1%, 0207 , MF	
	R..0106	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0107	57.11.3822	8.2 K	1%, 0207 , MF	
	R..0108	57.11.3473	47 K	1%, 0207 , MF	
	R..0109	57.11.3334	330 K	1%, 0207 , MF	
	R..0201	57.11.3102	1 K	1%, 0207 , MF	
	R..0202	57.11.3182	1.8 K	1%, 0207 , MF	
	R..0204	57.11.3304	300 K	1%, 0207 , MF	
	R..0206	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0207	57.11.3822	8.2 K	1%, 0207 , MF	
	R..0208	57.11.3473	47 K	1%, 0207 , MF	
	R..0209	57.11.3334	330 K	1%, 0207 , MF	

ORIG 86/09/16

STUDER (00) 86/09/16 REPRO. SPEED BOARD 9.5/19 IEC 1.777.630.00 PAGE 1

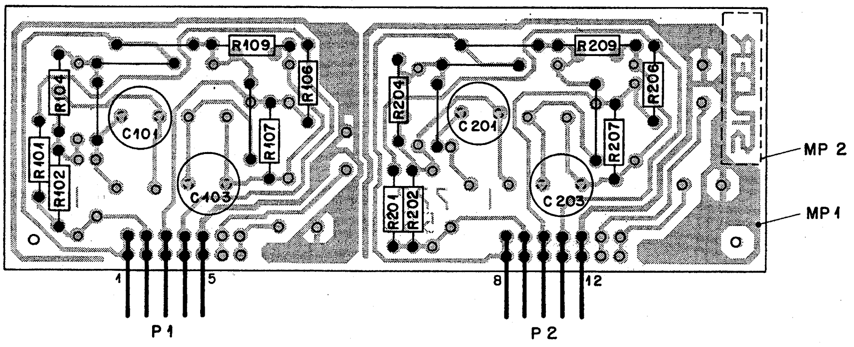
REPRO SPEED BOARD 19/38 IEC 1.777.632.00


CH1
P1
1
C101
C102
R104
R105
C103
C104
R109
R110
22n
220k
22n
300k
R102
R103
R107
R108
750
18k
FAST
2
SLOW
3
R101
R106
1k
1k
4
5
CH2
P2
8
C201
C202
R204
R205
C203
C204
R209
R210
22n
220k
22n
300k
R202
R203
R207
R208
750
18k
FAST
9
SLOW
10
R201
R206
1k
1k
11
12

Note:
Components with no value indication are not installed.

⓪ 14.2.87	○ . .	○ . .	○ . .	○ . .
	C270			PAGE 1 OF 1
STUDER	REPRO SPEED B. 19/38 IEC (7,5/15)	SC	1.777.632.00	

REPRO SPEED BOARD 19/38 IEC 1.777.632.00


R109
R106
R104
R101
R102
C101
R107
C103
1
5
P1
R209
R204
C201
R206
R207
R201
R202
C203
8
12
P2
MP 2
MP 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0101	59.05.2223	.022 U	2.5%, 63V , PP	
	C..0103	59.05.2223	.022 U	2.5%, 63V , PP	
	C..0201	59.05.2223	.022 U	2.5%, 63V , PP	
	C..0203	59.05.2223	.022 U	2.5%, 63V , PP	
	MP.0001	1.777.550.11		REPRO. SPEED BOARD PCB	
	MP.0002	1.777.632.01		Label	
	P..0001	54.01.0269	5 POL.	STRIP CIS	
	P..0002	54.01.0269	5 POL.	STRIP CIS	
	R..0101	57.11.3102	1 K	1%, 0207 , MF	
	R..0102	57.11.3751	750	1%, 0207 , MF	
	R..0104	57.11.4224	220 K	1%, 0207 , MF	
	R..0106	57.11.3102	1 K	1%, 0207 , MF	
	R..0107	57.11.3182	1.8 K	1%, 0207 , MF	
	R..0109	57.11.3304	300 K	1%, 0207 , MF	
	R..0201	57.11.3102	1 K	1%, 0207 , MF	
	R..0202	57.11.3751	750	1%, 0207 , MF	
	R..0204	57.11.4224	220 K	1%, 0207 , MF	
	R..0206	57.11.3102	1 K	1%, 0207 , MF	
	R..0207	57.11.3182	1.8 K	1%, 0207 , MF	
	R..0209	57.11.3304	300 K	1%, 0207 , MF	

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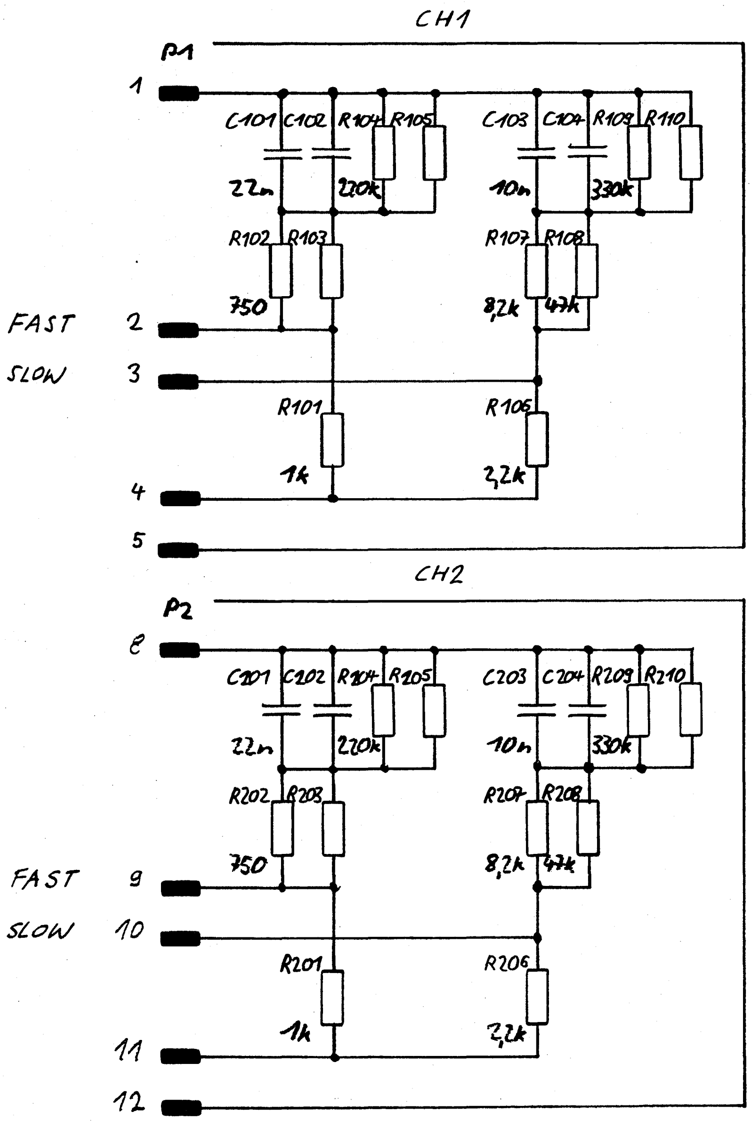
STUDER (00) 86/09/16 REPRO. SPEED BOARD 19/38 IEC 1.777.632.00 PAGE 1

REPRO SPEED BOARD 9.5/38 IEC 1.777.634.00

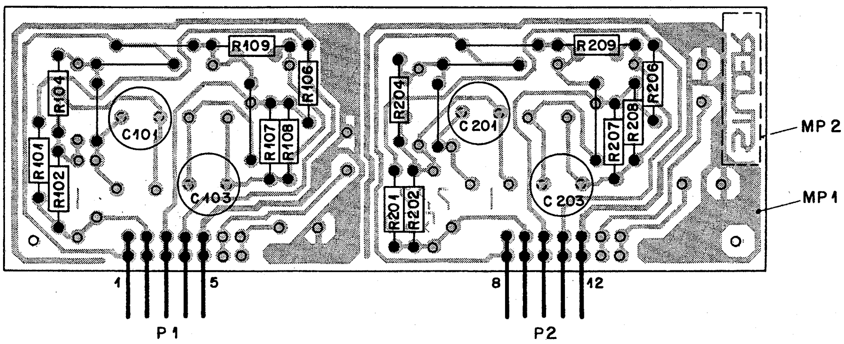

CH1
P1
1
C101
C102
R104
R105
C103
C104
R109
R110
22n
220k
10n
330k
R102
R103
R107
R108
750
8,2k
47k
FAST
2
SLOW
3
R101
R106
1k
2,2k
4
5
CH2
P2
8
C201
C202
R204
R205
C203
C204
R209
R210
22n
220k
10n
330k
R202
R203
R207
R208
750
8,2k
47k
FAST
9
SLOW
10
R201
R206
1k
2,2k
11
12

Note:
Components with no value indication are not installed.

⓪ 14.2.87	○ . .	○ . .	○ . .	○ . .
	C 270			PAGE 1 OF 1
STUDER	REPRO SPEED B. 9.5/38 IEC(3,75/15)		SC	1.777.634.00

PUBLISHED 5/89

REPRO SPEED BOARD 9.5/38 IEC 1.777.634.00


R109
R104
R106
R101
R102
C101
C103
R107
R108
R209
R204
R206
C201
R208
R207
R201
R202
C203
MP 2
MP 1
1
5
P 1
8
12
P 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0101	59.05.2223	.022 U	2.5%, 63V , PP	
	C..0103	59.05.2103	.01 U	2.5%, 63V , PP	
	C..0201	59.05.2223	.022 U	2.5%, 63V , PP	
	C..0203	59.05.2103	.01 U	2.5%, 63V , PP	
	MP.0001	1.777.550.11		REPRO. SPEED BOARD PCB	
	MP.0002	1.777.634.01		Label	
	P..0001	54.01.0269	5 POL.	STRIP CIS	
	P..0002	54.01.0269	5 POL.	STRIP CIS	
	R..0101	57.11.3102	1 K	1%, 0207 , MF	
	R..0102	57.11.3751	750	1%, 0207 , MF	
	R..0104	57.11.3224	220 K	1%, 0207 , MF	
	R..0106	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0107	57.11.3822	8.2 K	1%, 0207 , MF	
	R..0108	57.11.3473	47 K	1%, 0207 , MF	
	R..0109	57.11.3334	330 K	1%, 0207 , MF	
	R..0201	57.11.3102	1 K	1%, 0207 , MF	
	R..0202	57.11.3751	750	1%, 0207 , MF	
	R..0204	57.11.3224	220 K	1%, 0207 , MF	
	R..0206	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0207	57.11.3822	8.2 K	1%, 0207 , MF	
	R..0208	57.11.3473	47 K	1%, 0207 , MF	
	R..0209	57.11.3334	330 K	1%, 0207 , MF	

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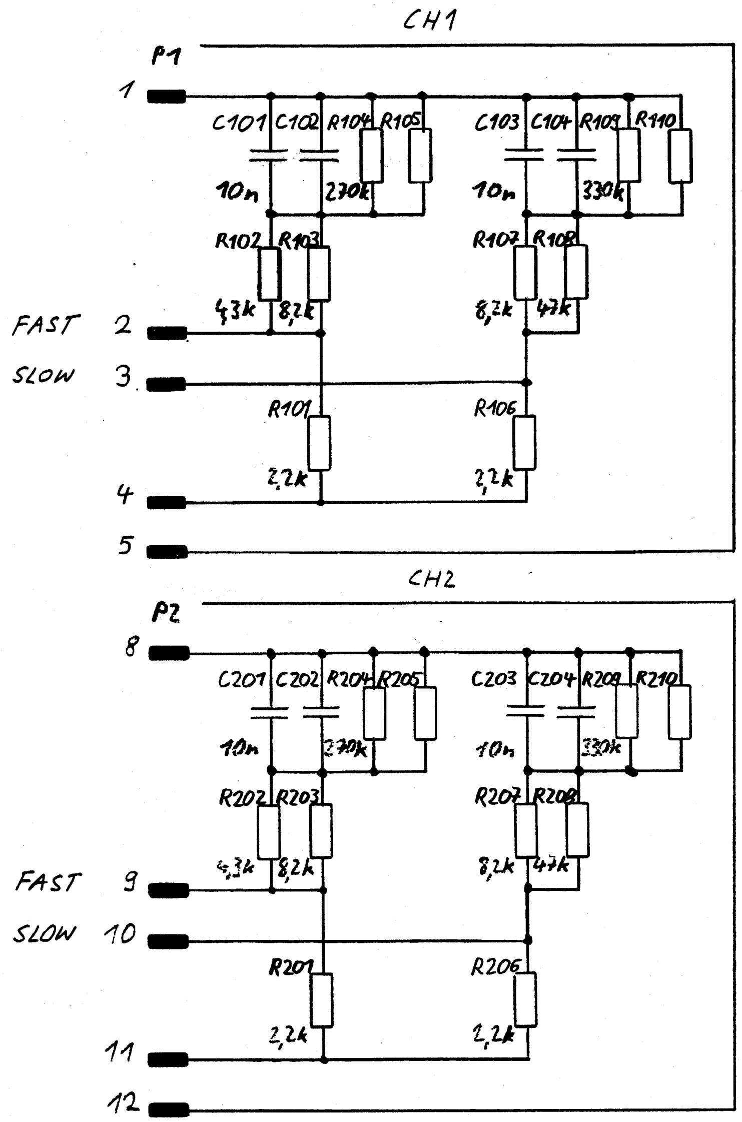
S T U D E R (00) 86/09/16 REPRO. SPEED BOARD 9.5/38 IEC 1.777.634.00 PAGE 1

REPRO SPEED BOARD 9.5/19 NAB 1.777.636.00

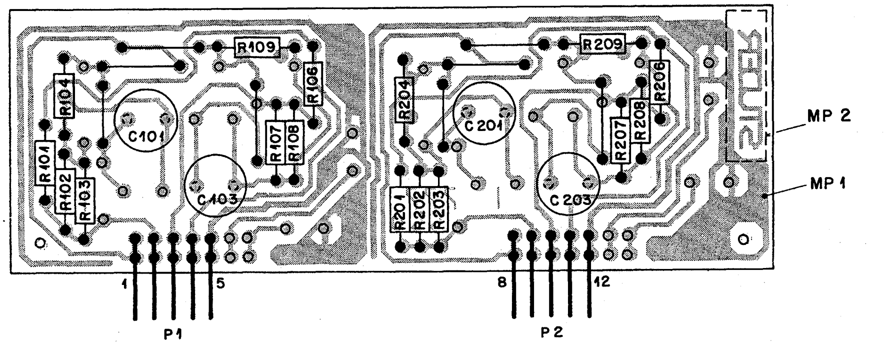

CH1
P1
1
C101
C102
R104
R105
C103
C104
R109
R110
10n
270k
10n
330k
R102
R103
R107
R108
4,3k
8,2k
8,2k
47k
FAST 2
SLOW 3
R101
R106
2,2k
2,2k
4
5
CH2
P2
8
C201
C202
R204
R205
C203
C204
R209
R210
10n
270k
10n
330k
R202
R203
R207
R208
4,3k
8,2k
8,2k
47k
FAST 9
SLOW 10
R201
R206
2,2k
2,2k
11
12

Note:
Components with no value indication are not installed.

⓪14.2.87 Zi Eu	○ . .	○ . .	○ . .	○ . .
	C270			PAGE 1 OF 1
STUDER	REPRO SPEED B. 9.5/19 NAB (3,75/7,5)	SC	1.777.636.00	

PUBLISHED 5/89

REPRO SPEED BOARD 9.5/19 NAB 1.777.636.00


R109
R104
R101
R102
R103
C101
C103
R107
R108
R106
R209
R204
C 201
C 203
R206
R207
R208
R201
R202
R203
REVOX
MP 2
MP 1
1
5
8
12
P1
P2

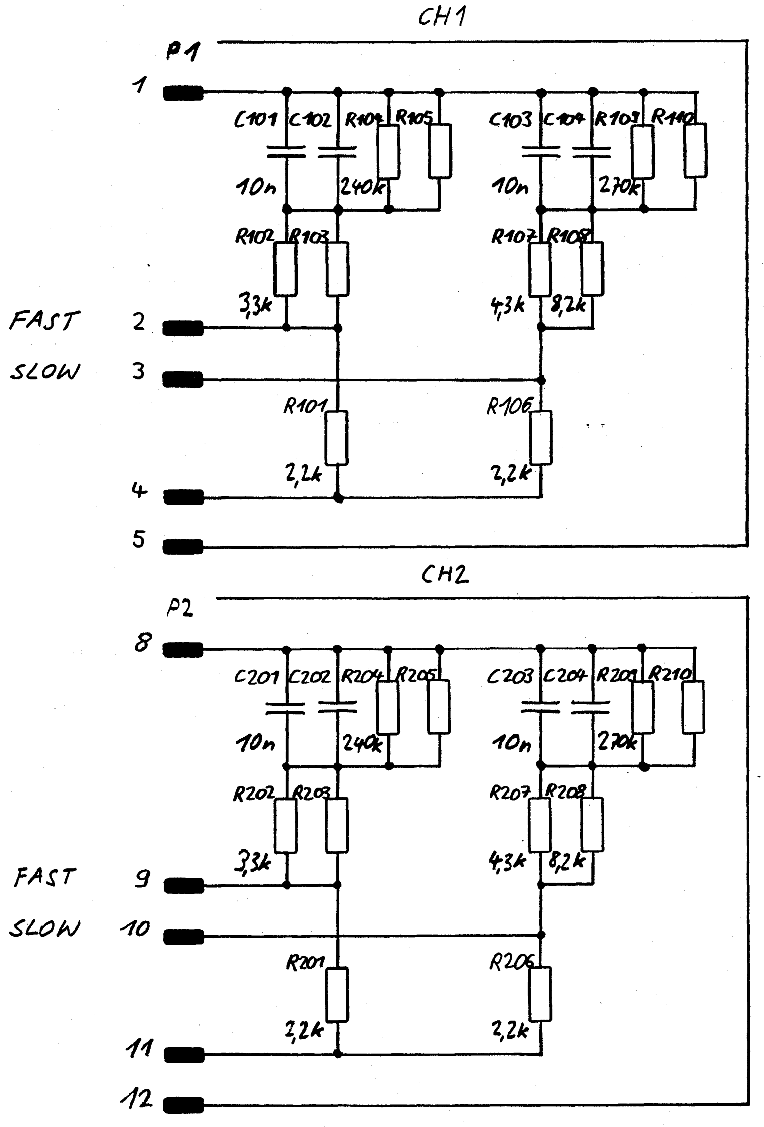
INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0101	59.05.2103	.01 U	2.5%, 63V , PP	
	C..0103	59.05.2103	.01 U	2.5%, 63V , PP	
	C..0201	59.05.2103	.01 U	2.5%, 63V , PP	
	C..0203	59.05.2103	.01 U	2.5%, 63V , PP	
	MP.0001	1.777.550.11		REPRO. SPEED BOARD PCB	
	MP.0002	1.777.636.01		Label	
	P..0001	54.01.0269	5 POL.	STRIP CIS	
	P..0002	54.01.0269	5 POL.	STRIP CIS	
	R..0101	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0102	57.11.3432	4.3 K	1%, 0207 , MF	
	R..0103	57.11.3822	8.2 K	1%, 0207 , MF	
(00)	R..0104	57.11.3274	270 K	1%, 0207 , MF	
(01)	R..0104	57.11.4274	270 K	2%, 0207 , MF	
	R..0106	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0107	57.11.3822	8.2 K	1%, 0207 , MF	
	R..0108	57.11.3473	47 K	1%, 0207 , MF	
	R..0109	57.11.3334	330 K	1%, 0207 , MF	
	R..0201	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0202	57.11.3432	4.3 K	1%, 0207 , MF	
	R..0203	57.11.3822	8.2 K	1%, 0207 , MF	
(00)	R..0204	57.11.3274	270 K	1%, 0207 , MF	
(01)	R..0204	57.11.4274	270 K	2%, 0207 , MF	
	R..0206	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0207	57.11.3822	8.2 K	1%, 0207 , MF	
	R..0208	57.11.3473	47 K	1%, 0207 , MF	
	R..0209	57.11.3334	330 K	1%, 0207 , MF	

(01) 26.06.87 PARTNUMBER CHANGE

ORIG 86/09/16 (01) 87/06/26

STUDER (01) 87/06/26 REPRO. SPEED BOARD 9.5/19 NAB 1.777.636.00 PAGE 1

REPRO SPEED BOARD 19/38 NAB 1.777.638.00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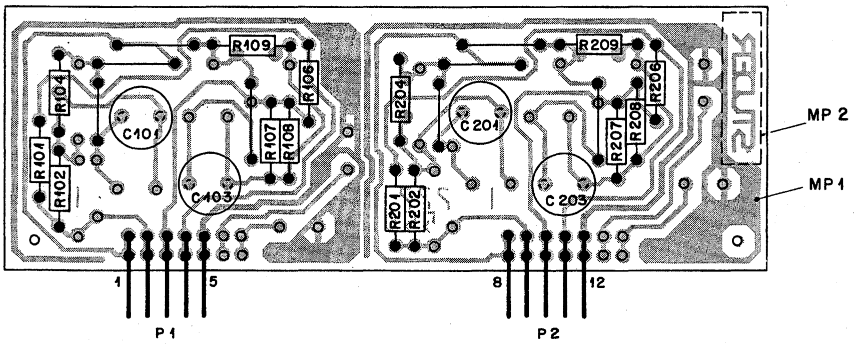
P1
1
C101
C102
R104
R105
C103
C104
R109
R110
10n
240k
10n
270k
R102
R103
R107
R108
3,3k
4,3k
8,2k
FAST
2
SLOW
3
R101
R106
2,2k
2,2k
4
5
CH2
P2
8
C201
C202
R204
R205
C203
C204
R209
R210
10n
240k
10n
270k
R202
R203
R207
R208
3,3k
4,3k
8,2k
FAST
9
SLOW
10
R201
R206
2,2k
2,2k
11
12

Note:
Components with no value indication are not installed.

⓪14.2.87	○ . .	○ . .	○ . .	○ . .
	C270			PAGE 1 OF 1
STUDER	REPRO SPEED B. 19/38 NAB (7,5 / 15)		SC	1.777.638. 00

REPRO SPEED BOARD 19/38 NAB 1.777.638.00


R109
R209
R104
R106
R204
R206
C101
C201
R107
R108
R207
R208
R101
R102
C103
R201
R202
C203
MP 2
MP 1
1
5
8
12
P1
P2

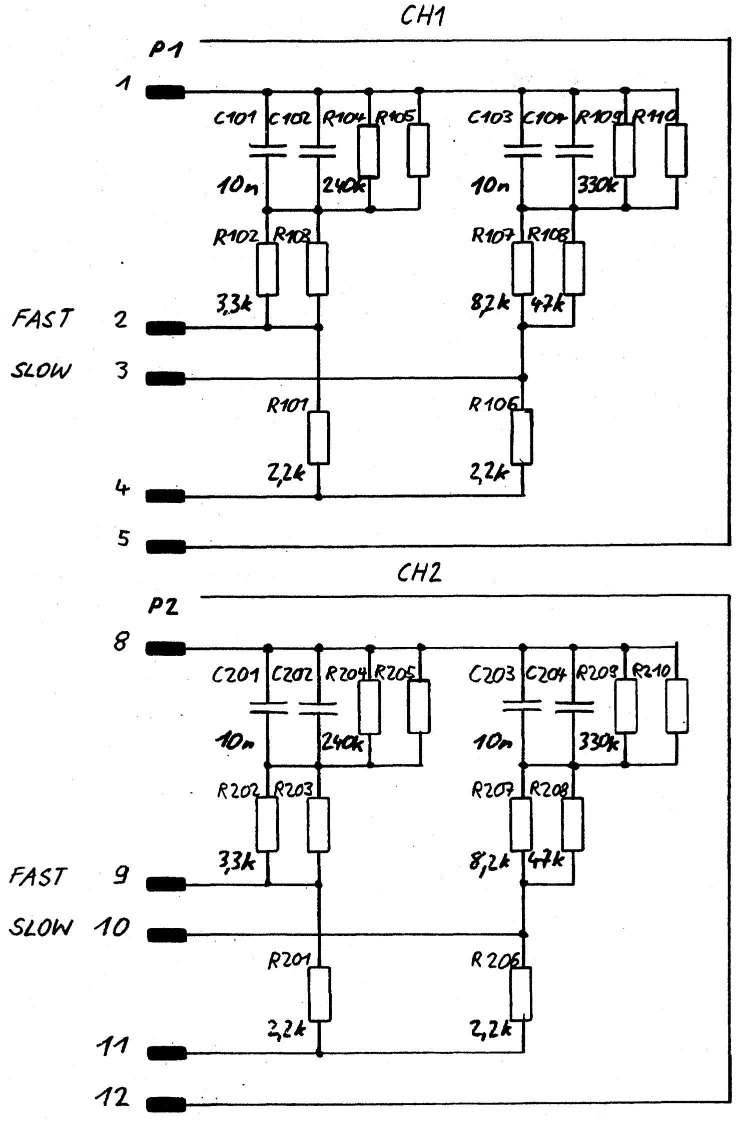
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0101	59.05.2103	.01 U	2.5%, 63V , PP	
	C..0103	59.05.2103	.01 U	2.5%, 63V , PP	
	C..0201	59.05.2103	.01 U	2.5%, 63V , PP	
	C..0203	59.05.2103	.01 U	2.5%, 63V , PP	
	MP.0001	1.777.550.11		REPRO. SPEED BOARD PCB	
	MP.0002	1.777.638.01		Label	
	P..0001	54.01.0269	5 POL	STRIP CIS	
	P..0002	54.01.0269	5 POL	STRIP CIS	
	R..0101	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0102	57.11.3332	3.3 K	1%, 0207 , MF	
	R..0104	57.11.3244	240 K	1%, 0207 , MF	
	R..0106	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0107	57.11.3432	4.3 K	1%, 0207 , MF	
	R..0108	57.11.3822	8.2 K	1%, 0207 , MF	
(00)	R..0109	57.11.3274	270 K	1%, 0207 , MF	
(01)	R..0109	57.11.4274	270 K	2%, 0207 , MF	
	R..0201	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0202	57.11.3332	3.3 K	1%, 0207 , MF	
	R..0204	57.11.3244	240 K	1%, 0207 , MF	
	R..0206	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0207	57.11.3432	4.3 K	1%, 0207 , MF	
	R..0208	57.11.3822	8.2 K	1%, 0207 , MF	
(00)	R..0209	57.11.3274	270 K	1%, 0207 , MF	
(01)	R..0209	57.11.4274	270 K	2%, 0207 , MF	

(01) 26.06.87 PARTNUMBER CHANGE

ORIG 86/09/16 (01) 87/06/26

STUDER (01) 87/06/26 REPRO. SPEED BOARD 19/38 NAB 1.777.638.00 PAGE 1

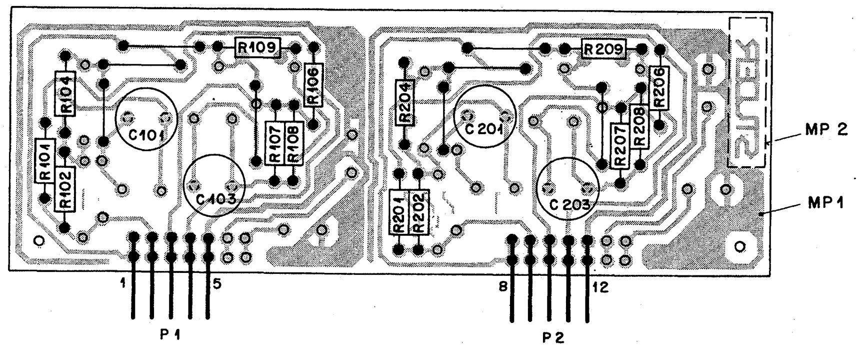
REPRO SPEED BOARD 9.5/38 NAB 1.777.639.00


CH1
P1
1
C101
C102
R104
R105
C103
C104
R109
R110
10n
240k
10n
330k
R102
R103
R107
R108
3,3k
8,2k
47k
FAST 2
SLOW 3
R101
R106
2,2k
2,2k
4
5
CH2
P2
8
C201
C202
R204
R205
C203
C204
R209
R210
10n
240k
10n
330k
R202
R203
R207
R208
3,3k
8,2k
47k
FAST 9
SLOW 10
R201
R206
2,2k
2,2k
11
12

Note:
Components with no value indication are not installed.

⓪ 14.2.87				○ . .	○ . .	○ . .	○ . .	
				C270			PAGE 1 OF 1	
STUDER				REPRO SPEED B.9.5/38 NAB(3,75/15)			SC	1.777.639.00

REPRO SPEED BOARD 9.5/38 NAB 1.777.639.00

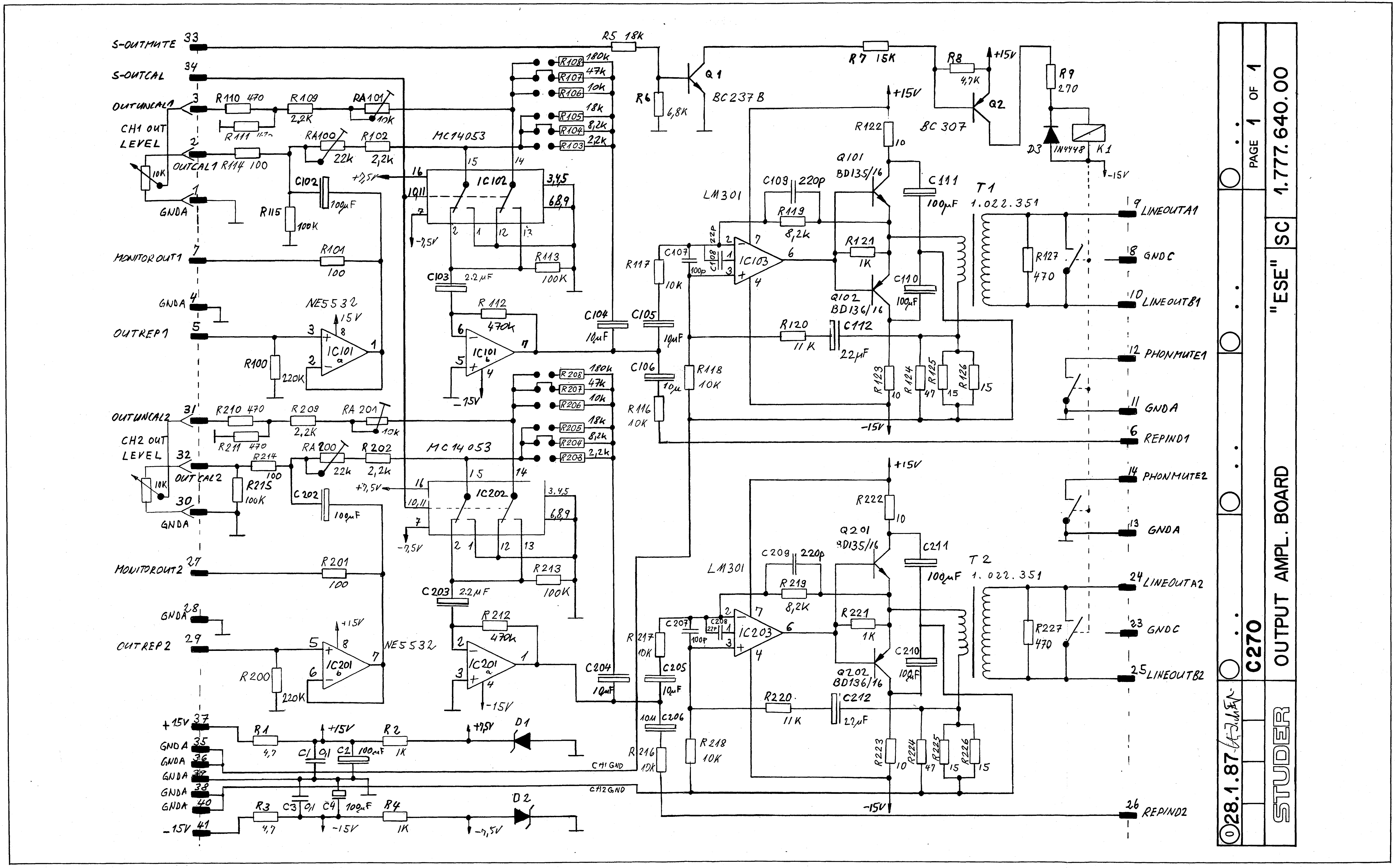

R109
R104
R106
C101
R107
R108
R101
R102
C103
R209
R204
R206
C201
R207
R208
R201
R202
C203
MP 2
MP 1
1
5
8
12
P 1
P 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0101	59.05.2103	.01 U	2.5%, 63V , PP	
	C..0103	59.05.2103	.01 U	2.5%, 63V , PP	
	C..0201	59.05.2103	.01 U	2.5%, 63V , PP	
	C..0203	59.05.2103	.01 U	2.5%, 63V , PP	
	MP.0001	1.777.550.11		REPRO. SPEED BOARD PCB	
	MP.0002	1.777.639.01		Label	
	P..0001	54.01.0269	5 POL	STRIP CIS	
	P..0002	54.01.0269	5 POL	STRIP CIS	
	R..0101	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0102	57.11.3332	3.3 K	1%, 0207 , MF	
	R..0104	57.11.3244	240 K	1%, 0207 , MF	
	R..0106	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0107	57.11.3822	8.2 K	1%, 0207 , MF	
	R..0108	57.11.3473	47 K	1%, 0207 , MF	
	R..0109	57.11.3334	330 K	1%, 0207 , MF	
	R..0201	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0202	57.11.3332	3.3 K	1%, 0207 , MF	
	R..0204	57.11.3244	240 K	1%, 0207 , MF	
	R..0206	57.11.3222	2.2 K	1%, 0207 , MF	
	R..0207	57.11.3822	8.2 K	1%, 0207 , MF	
	R..0208	57.11.3473	47 K	1%, 0207 , MF	
	R..0209	57.11.3334	330 K	1%, 0207 , MF	

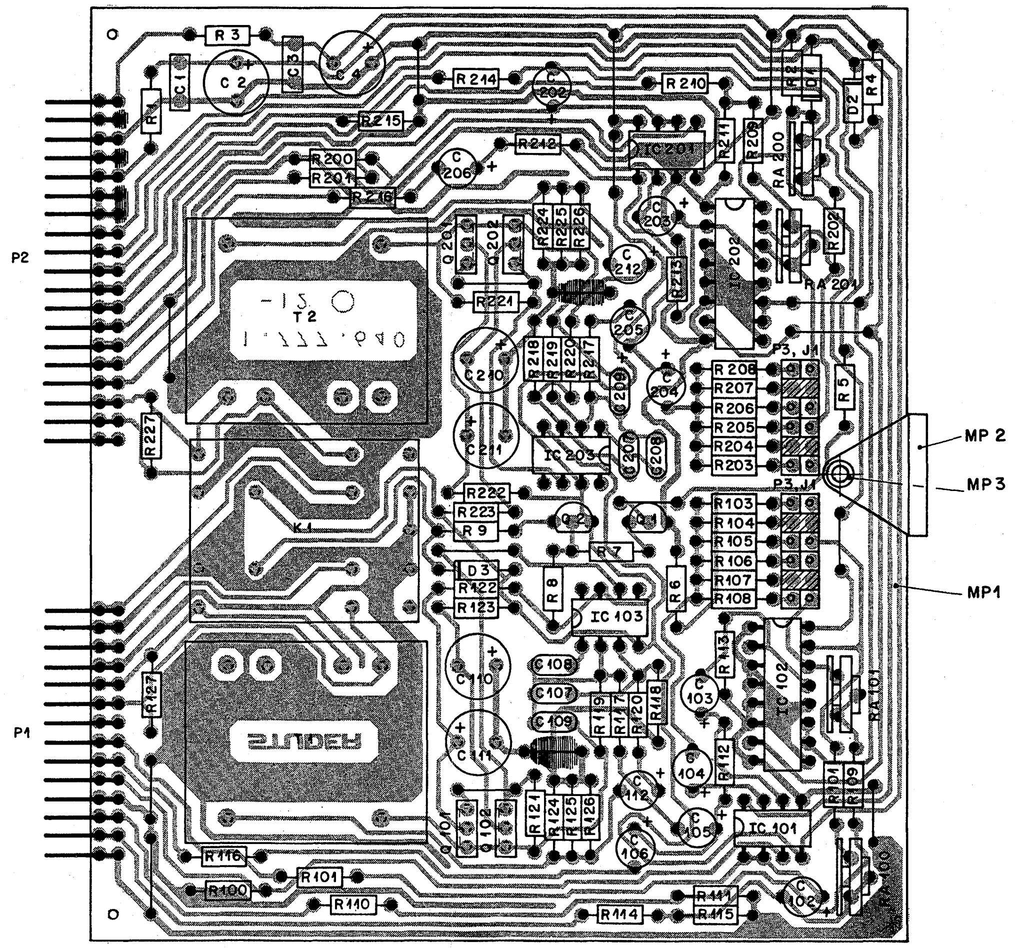
ORIG 86/09/16

STUDER (00) 86/09/16 REPRO. SPEED BOARD 9.5/38 NAB 1.777.639.00 PAGE 1

OUTPUT AMPLIFIER BOARD 1.777.640.00


S-OUTMUTE 33
S-OUTCAL 34
OUTUNCAL1 3
CH1 OUT LEVEL
OUTCAL1 2
GNDA 1
MONITOROUT1 7
GNDA 4
OUTREP1 5
OUTUNCAL2 31
CH2 OUT LEVEL
OUTCAL2 32
GNDA 30
MONITOROUT2 27
GNDA 28
OUTREP2 29
+15V 37
GNDA 35
GNDA 36
GNDA 39
GNDA 38
GNDA 40
-15V 41
R110 470
R111
R109 2,2K
RA101 10K
RA100 22k
R102 2,2k
R114 100
R115 100k
C102 100μF
10K
MC14053
IC102
R108 180k
R107 47k
R106 10k
R105 18k
R104 8,2k
R103 22k
3,4,5
6,8,9
16
10,11
15
14
+7,5V
-7,5V
R113 100K
R101 100
C103 2,2μF
R112 470k
IC101 b
IC101 a
NE5532
R100 220K
C104 10μF
C105 10μF
C106 10μ
R5 18k
R6 6,8K
Q1 BC237B
R7 15K
R8 4,7K
Q2 BC307
+15V
R9 270
D3 1N4448
K1
-15V
R117 10K
R118 10K
R116 10K
C107 100p
C108 22p
LM301
IC103
C109 220p
R119 8,2k
R122 10
Q101 BD135/16
R121 1K
Q102 BD136/16
C111 100μF
C110 100μF
T1 1.022.351
R120 11K
C112 22μF
R123 10
R124 47
R125 15
R126 15
R127 470
9 LINEOUTA1
8 GNDC
10 LINEOUTB1
12 PHONMUTE1
11 GNDA
6 REPIND1
14 PHONMUTE2
13 GNDA
24 LINEOUTA2
23 GNDC
25 LINEOUTB2
26 REPIND2
R210 470
R211 470
R209 2,2K
RA201 10K
RA200 22k
R202 2,2k
R214 100
R215 100K
C202 100μF
MC14053
IC202
R208 180k
R207 47k
R206 10k
R205 18k
R204 8,2k
R203 2,2k
R213 100K
R201 100
C203 2,2μF
R212 470k
IC201 a
IC201 b
NE5532
R200 220K
C204 10μF
C205 10μF
C206 10μ
R217 10K
R218 10K
R216 10K
C207 100p
C208 22p
LM301
IC203
C209 220p
R219 8,2K
R222 10
Q201 BD135/16
R221 1K
Q202 BD136/16
C211 100μF
C210 100μF
T2 1.022.351
R220 11K
C212 2,2μF
R223 10
R224 47
R225 15
R226 15
R227 470
R1 4,7
C1 0,1
C2 100μF
R2 1K
D1
R3 4,7
C3 0,1
C4 100μF
R4 1K
D2
CH1 GND
CH2 GND
PAGE 1 OF 1
1.777.640.00
SC
"ESE"
C270
OUTPUT AMPL. BOARD
STUDER
28.1.87

OUTPUT AMPLIFIER BOARD 1.777.640.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C..0001	59.06.5104	.1 U	5%, 63V , PETP	
	C..0002	59.22.5101	100 U	-20%, 25V , EL	
	C..0003	59.06.5104	.1 U	5%, 63V , PETP	
	C..0004	59.22.5101	100 U	-20%, 25V , EL	
	C..0102	59.22.3101	100 U	-20%, 10V , EL	
	C..0103	59.22.8229	2.2 U	-20%, 63V , EL	
	C..0104	59.22.6100	10 U	-20%, 40V , EL	
	C..0105	59.22.6100	10 U	-20%, 40V , EL	
	C..0106	59.22.6100	10 U	-20%, 40V , EL	
	C..0107	59.34.4101	100 P	5%, N750 , CER	
	C..0108	59.34.2220	22 P	5%, N150 , CER	
	C..0109	59.34.4221	220 P	5%, N750 , CER	
(00)	C..0110	59.22.5220	22 U	-20%, 25V , EL	
	C..0110	59.22.5101	100 U	-20%, 25V , EL	
	C..0111	59.22.5101	100 U	-20%, 25V , EL	
	C..0112	59.22.5220	22 U	-20%, 25V , EL	
	C..0202	59.22.3101	100 U	-20%, 10V , EL	
	C..0203	59.22.8229	2.2 U	-20%, 63V , EL	
	C..0204	59.22.6100	10 U	-20%, 40V , EL	
	C..0205	59.22.6100	10 U	-20%, 40V , EL	
	C..0206	59.22.6100	10 U	-20%, 40V , EL	
	C..0207	59.34.4101	100 P	5%, N750 , CER	
	C..0208	59.34.2220	22 P	5%, N150 , CER	
	C..0209	59.34.4221	220 P	5%, N750 , CER	
(00)	C..0210	59.22.5220	22 U	-20%, 25V , EL	
	C..0210	59.22.5101	100 U	-20%, 25V , EL	
	C..0211	59.22.5101	100 U	-20%, 25V , EL	
	C..0212	59.22.5220	22 U	-20%, 25V , EL	
	D..0001	50.04.1103	7.5 V	5%, .40W , Z	ITT,Mot,Ph
	D..0002	50.04.1103	7.5 V	5%, .40W , Z	
	D..0003	50.04.0125		1N 4448 , SI	
	IC.0101	50.09.0105		NE 5532 N	Sig,Ex,Ra
	IC.0102	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	IC.0103	50.05.0144		LM 301 AN	NS
	IC.0201	50.09.0105		NE 5532 N	Sig,Ex,Ra

S T U D E R (01) 87/11/15 OUTPUT AMPL. BOARD A 1.777.640.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	IC.0202	50.07.0015		MC 14 053BCP,CD 4053 BCN,A	Mot,NS
	IC.0203	50.05.0144		LM 301 AN	NS
	J..0001	54.01.0021	4 pcs	JUMPER	Bg
	K..0001	56.04.0144	24V 4*U	220V / 2A , PRINT	Omron,Zettler,SDS
(00)	MP.0001	1.777.640.11		OUTPUT AMPL. PCB	St
(01)	MP.0001	1.777.640.12		OUTPUT AMPL. PCB	St
	MP.0002	1.010.001.33		GRIP	St
	MP.0003	28.21.1360	D2.25*5	TUBULARRIVET	St
	P..0001	54.01.0274	14 POL.	STRIP CIS ANGLES	AMP
	P..0002	54.01.0279	19 POL.	STRIP CIS ANGLES	AMP
	P..0003	54.01.0020	24 pcs	H=5.8/3.4	Bg
	Q..0001	50.03.0436		BC 237 B , BC 547 B	Sie,Ph,Mot
	Q..0002	50.03.0515		BC 307 , BC 557 B	Ph,Mot,ITT
	Q..0101	50.03.0495		BD 135-16	Ph,SGS,To
	Q..0102	50.03.0510		BD 136-16	
	Q..0201	50.03.0495		BD 135-16	
	Q..0202	50.03.0510		BD 136-16	
	R..0001	57.11.4479	4.7	2%, 0207 , MF	
	R..0002	57.11.4102	1 K	2%, 0207 , MF	
	R..0003	57.11.4479	4.7	2%, 0207 , MF	
	R..0004	57.11.4102	1 K	2%, 0207 , MF	
	R..0005	57.11.4183	18 K	2%, 0207 , MF	
	R..0006	57.11.4682	6.8 K	2%, 0207 , MF	
	R..0007	57.11.4153	15 K	2%, 0207 , MF	
	R..0008	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0009	57.11.4271	270	2%, 0207 , MF	
	R..0100	57.11.4224	220 K	2%, 0207 , MF	
	R..0101	57.11.4101	100	2%, 0207 , MF	
	R..0102	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0103	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0104	57.11.4822	8.2 K	2%, 0207 , MF	

S T U D E R (01) 87/11/15 OUTPUT AMPL. BOARD A 1.777.640.00 PAGE 2

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0105	57.11.4183	18 K	2%, 0207 , MF	
	R..0106	57.11.4103	10 K	2%, 0207 , MF	
	R..0107	57.11.4473	47 K	2%, 0207 , MF	
	R..0108	57.11.4184	180 K	2%, 0207 , MF	
	R..0109	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0110	57.11.4471	470	2%, 0207 , MF	
	R..0111	57.11.4471	470	2%, 0207 , MF	
	R..0112	57.11.4474	470 K	2%, 0207 , MF	
	R..0113	57.11.4104	100 K	2%, 0207 , MF	
	R..0114	57.11.4101	100	2%, 0207 , MF	
	R..0115	57.11.4104	100 K	2%, 0207 , MF	
	R..0116	57.11.4103	10 K	2%, 0207 , MF	
	R..0117	57.11.4103	10 K	2%, 0207 , MF	
	R..0118	57.11.4103	10 K	2%, 0207 , MF	
	R..0119	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0120	57.11.3113	11 K	1%, 0207 , MF	
	R..0121	57.11.4102	1 K	2%, 0207 , MF	
	R..0122	57.11.4100	10	2%, 0207 , MF	
	R..0123	57.11.4100	10	2%, 0207 , MF	
	R..0124	57.11.4470	47	2%, 0207 , MF	
	R..0125	57.11.4150	15	2%, 0207 , MF	
	R..0126	57.11.4150	15	2%, 0207 , MF	
	R..0127	57.11.4471	470	2%, 0207 , MF	
	R..0200	57.11.4224	220 K	2%, 0207 , MF	
	R..0201	57.11.4101	100	2%, 0207 , MF	
	R..0202	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0203	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0204	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0205	57.11.4183	18 K	2%, 0207 , MF	
	R..0206	57.11.4103	10 K	2%, 0207 , MF	
	R..0207	57.11.4473	47 K	2%, 0207 , MF	
	R..0208	57.11.4184	180 K	2%, 0207 , MF	
	R..0209	57.11.4222	2.2 K	2%, 0207 , MF	
	R..0210	57.11.4471	470	2%, 0207 , MF	
	R..0211	57.11.4471	470	2%, 0207 , MF	
	R..0212	57.11.4474	470 K	2%, 0207 , MF	
	R..0213	57.11.4104	100 K	2%, 0207 , MF	

S T U D E R (01) 87/11/15 OUTPUT AMPL. BOARD A 1.777.640.00 PAGE 3

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0214	57.11.4101	100	2%, 0207 , MF	
	R..0215	57.11.4104	100 K	2%, 0207 , MF	
	R..0216	57.11.4103	10 K	2%, 0207 , MF	
	R..0217	57.11.4103	10 K	2%, 0207 , MF	
	R..0218	57.11.4103	10 K	2%, 0207 , MF	
	R..0219	57.11.4822	8.2 K	2%, 0207 , MF	
	R..0220	57.11.3113	11 K	1%, 0207 , MF	
	R..0221	57.11.4102	1 K	2%, 0207 , MF	
	R..0222	57.11.4100	10	2%, 0207 , MF	
	R..0223	57.11.4100	10	2%, 0207 , MF	
	R..0224	57.11.4470	47	2%, 0207 , MF	
	R..0225	57.11.4150	15	2%, 0207 , MF	
	R..0226	57.11.4150	15	2%, 0207 , MF	
	R..0227	57.11.4471	470	2%, 0207 , MF	
	RA.0100	58.02.4223	22 K	20%, .1 W , PCSCH	Ph,Draloric
	RA.0101	58.02.4103	10 K	20%, .1 W , PCSCH	Ph,Draloric
	RA.0200	58.02.4223	22 K	20%, .1 W , PCSCH	Ph,Draloric
	RA.0201	58.02.4103	10 K	20%, .1 W , PCSCH	Ph,Draloric
	T..0001	1.022.351.00		TRANSFORMER OUTPUT	St
	T..0002	1.022.351.00		TRANSFORMER OUTPUT	

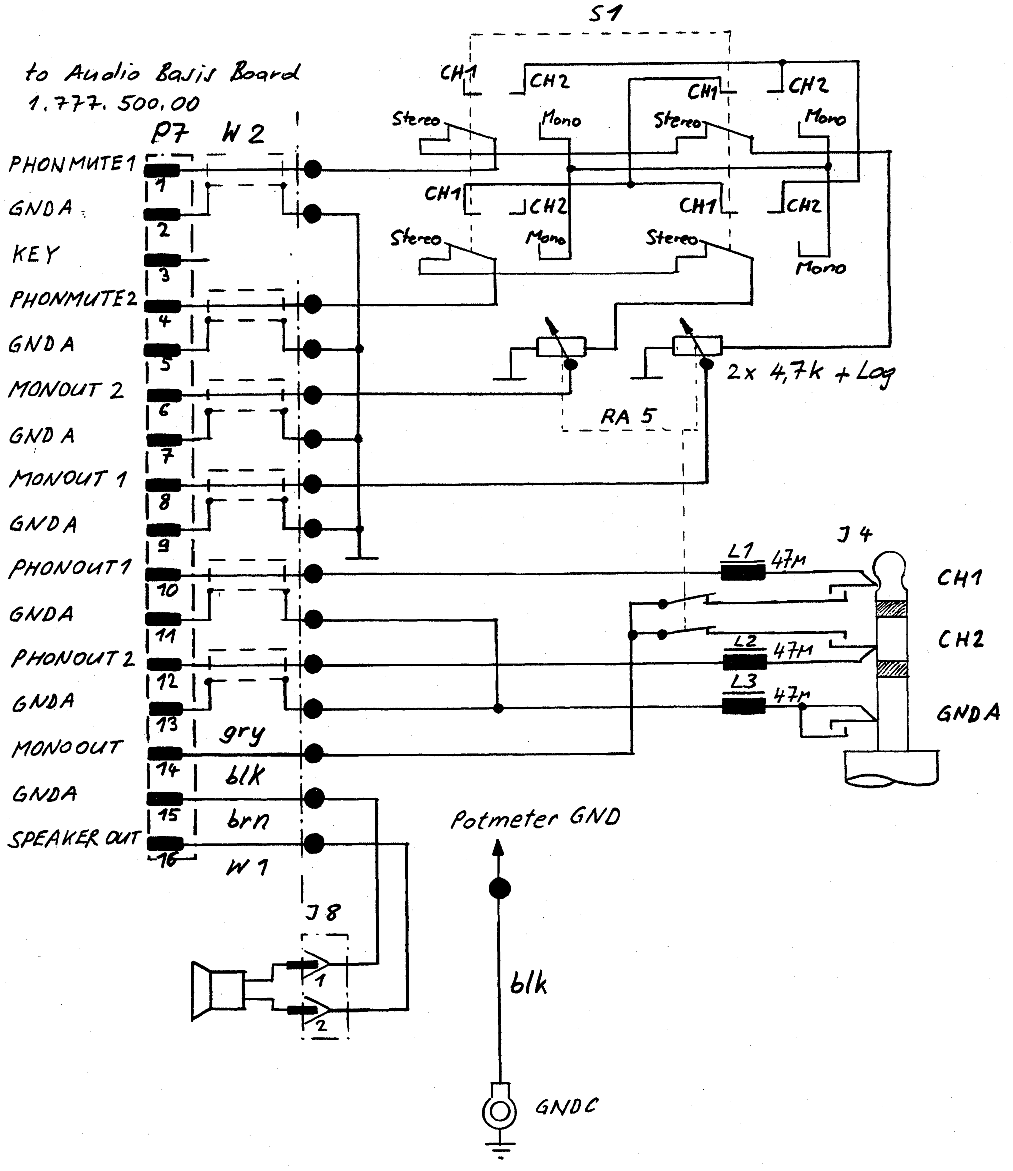
(01) 15.11.87 PCB Revise

MANUFACTURER: Mot=Motorola, NS=National Semiconductors, Ph=Philips
Sig=Signetics, St=Studer, Ex=Exar,Ra=Raytheon,To=Toshiba,
SGS=SGS/Ates,Bg=Berg,AMP=AMP Incorporated,Sie=Siemens,
ITT=Intermetall.

ORIG 86/09/16 (01) 87/11/15

S T U D E R (01) 87/11/15 OUTPUT AMPL. BOARD A 1.777.640.00 PAGE 4

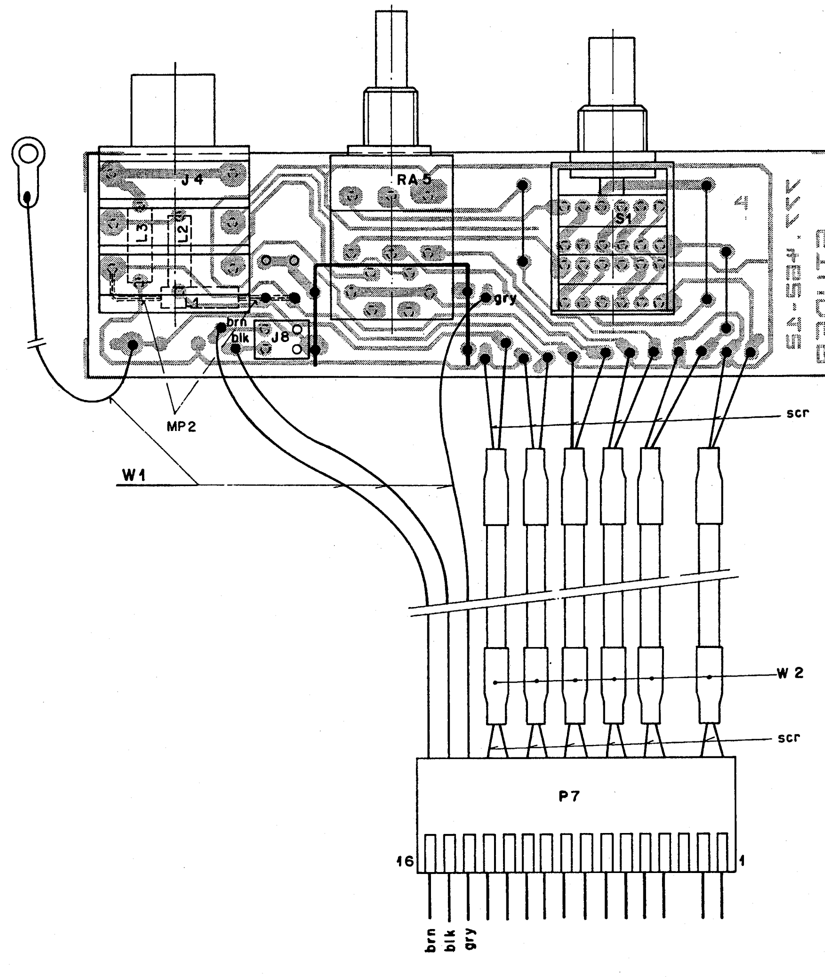
AUDIO SWITCH BOARD 1.777.462.00


S1
to Audio Basis Board
1.777.500.00
P7
W2
PHONMUTE1
GNDA
KEY
PHONMUTE2
GND A
MONOUT 2
GND A
MONOUT 1
GNDA
PHONOUT1
GNDA
PHONOUT 2
GNDA
MONOOUT
GNDA
SPEAKER OUT
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
gry
blk
brn
W1
CH1
CH2
Stereo
Mono
2x 4,7k + Log
RA 5
L1 47μ
L2 47μ
L3 47μ
J4
CH1
CH2
GNDA
Potmeter GND
blk
GNDC
J8
1
2

⓪ 19.1.87	① 12.8.87 J.M.E	② 10.12.87 J.M.E	○ . .	○ . .
	C270			PAGE 1 OF 1
STUDER	SWITCH BOARD		SC	1.777.462.00

PUBLISHED 01/88

AUDIO SWITCH BOARD 1.777.462.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)	C..0001	59.32.3103		C 10 N ,20% , CER	
(03)	C..0001			not connected	
(01)	C..0002	59.32.3103		C 10 N ,20% , CER	
(03)	C..0002			not connected	
(00)	C..0012	59.34.1101		C 100 P , 5% , CER	
(01)	C..0012	59.06.0104		C 100 N ,10% , PETP	
(03)	C..0012			not connected	
(03)	L..0001	62.01.0138		coil 47 Mikro	ph
(03)	L..0002	62.01.0138		coil 47 Mikro	ph
(03)	L..0003	62.01.0138		coil 47 Mikro	ph
	J..0004	1.710.350.02		JACK STEREO	St
(00)	J..0008	54.01.0287	3 POL.	SOCKET STRIP CIS	AMP
(01)	J..0008	54.01.0204	2 POL.	SOCKET STRIP CIS	AMP
(00)	MP.0001	1.777.462.11		LEVEL-SWITCH PCB	St
(02)	MP.0001	1.777.462.12		LEVEL-SWITCH PCB	St
(03)	MP.0002	1.010.105.65	2 pcs	TUBE	St
	P..0007	54.01.0283	16 POL.	CASING CIS	AMP
	RA.0005	1.010.024.58		POT 4.7 K +LOG	Preh
	S..0001	1.725.810.02		ROTARY SWITCH	Alps
	W..0001	1.777.462.93		WL-SWITCH BOARD	St
	W..0002	1.777.462.94		KL-SWITCH BOARD	St

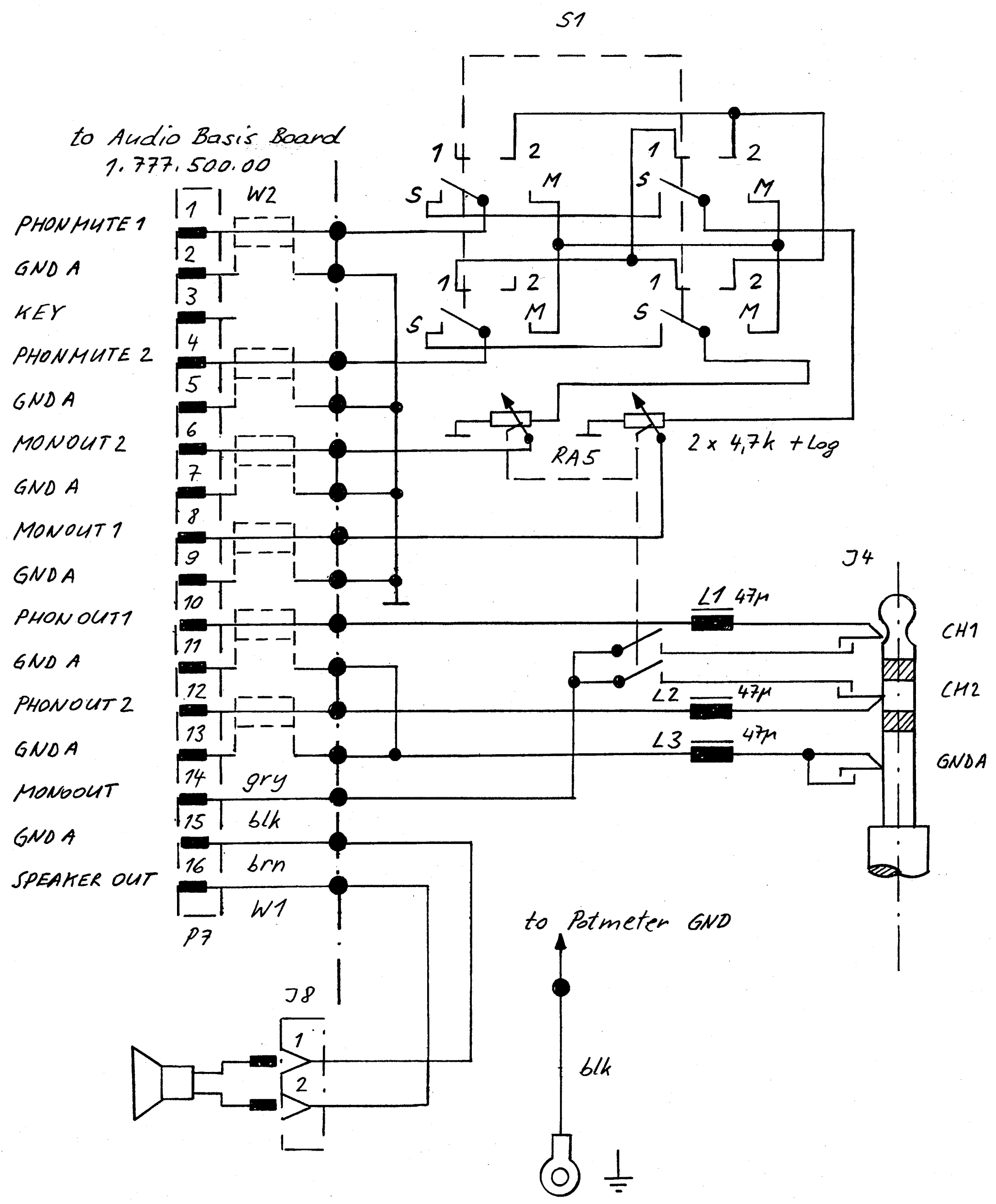
(01) 12.08.87 Value adjust
(02) 15.11.87 PCB Revise
(03) 10.12.87 FTZ Revise

MANUFACTURER: ST=Studer,Alps=Alps&Co.AMP=AMP Incorporated,
ph=Philips.

ORIG 87/01/20 (01) 87/08/12 (02) 87/11/15 (03) 87/12/10

STUDER (03) 87/12/10 SWITCH BOARD 1.777.462.00 PAGE 1

SWITCH BOARD 1.777.463.00


S1
to Audio Basis Board
1.777.500.00
W2
PHONMUTE 1
GND A
KEY
PHONMUTE 2
GND A
MONOUT 2
GND A
MONOUT 1
GND A
PHONOUT 1
GND A
PHONOUT 2
GND A
MONOOUT
GND A
SPEAKER OUT
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
gry
blk
brn
W1
P7
S
M
1
2
RAS
2 x 4,7k +log
J4
L1 47µ
L2 47µ
L3 47µ
CH1
CH2
GNDA
to Potmeter GND
blk
J8

⓪ 16.12.87 J. Mett	○ . .	○ . .	○ . .	○ . .
	C 270			PAGE 1 OF 1
STUDER	SWITCH BOARD		SC	1.777.463-00

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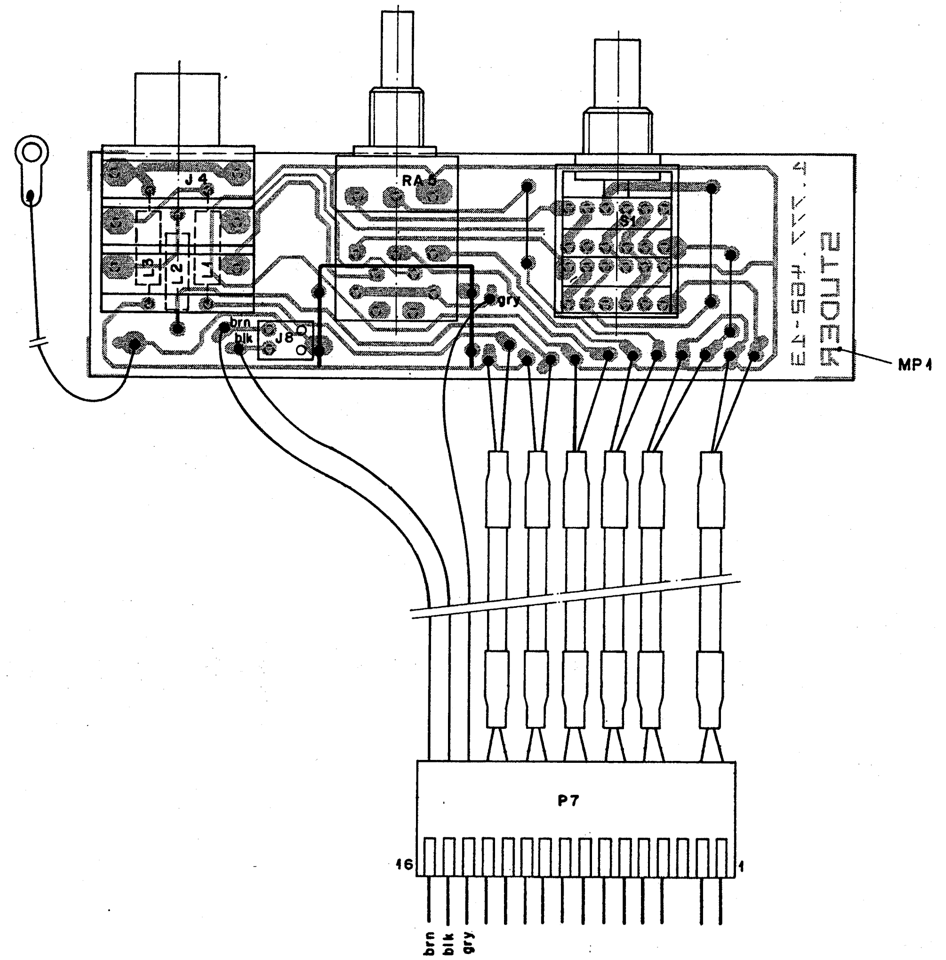
SWITCH BOARD 1.777.463.00



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	L..0001	62.01.0138		coil 47 Mikro	ph
	L..0002	62.01.0138		coil 47 Mikro	ph
	L..0003	62.01.0138		coil 47 Mikro	ph
	J..0004	1.710.350.02		JACK STEREO	St
	J..0008	54.01.0204	2 POL.	SOCKET STRIP CIS	AMP
	MP.0001	1.777.462.13		LEVEL-SWITCH PCB	St
	P..0007	54.01.0283	16 POL.	CASING CIS	AMP
	RA.0005	1.010.024.58		POT 4.7 K .LOG	Preh
	S..0001	1.725.810.02		ROTARY SWITCH	Alps
	W..0001	1.777.462.93		WL-SWITCH BOARD	St
	W..0002	1.777.462.94		KL-SWITCH BOARD	St

MANUFACTURER: ST=Studer,Alps=Alps&Co,AMP=AMP Incorporated,
ph=Philips.

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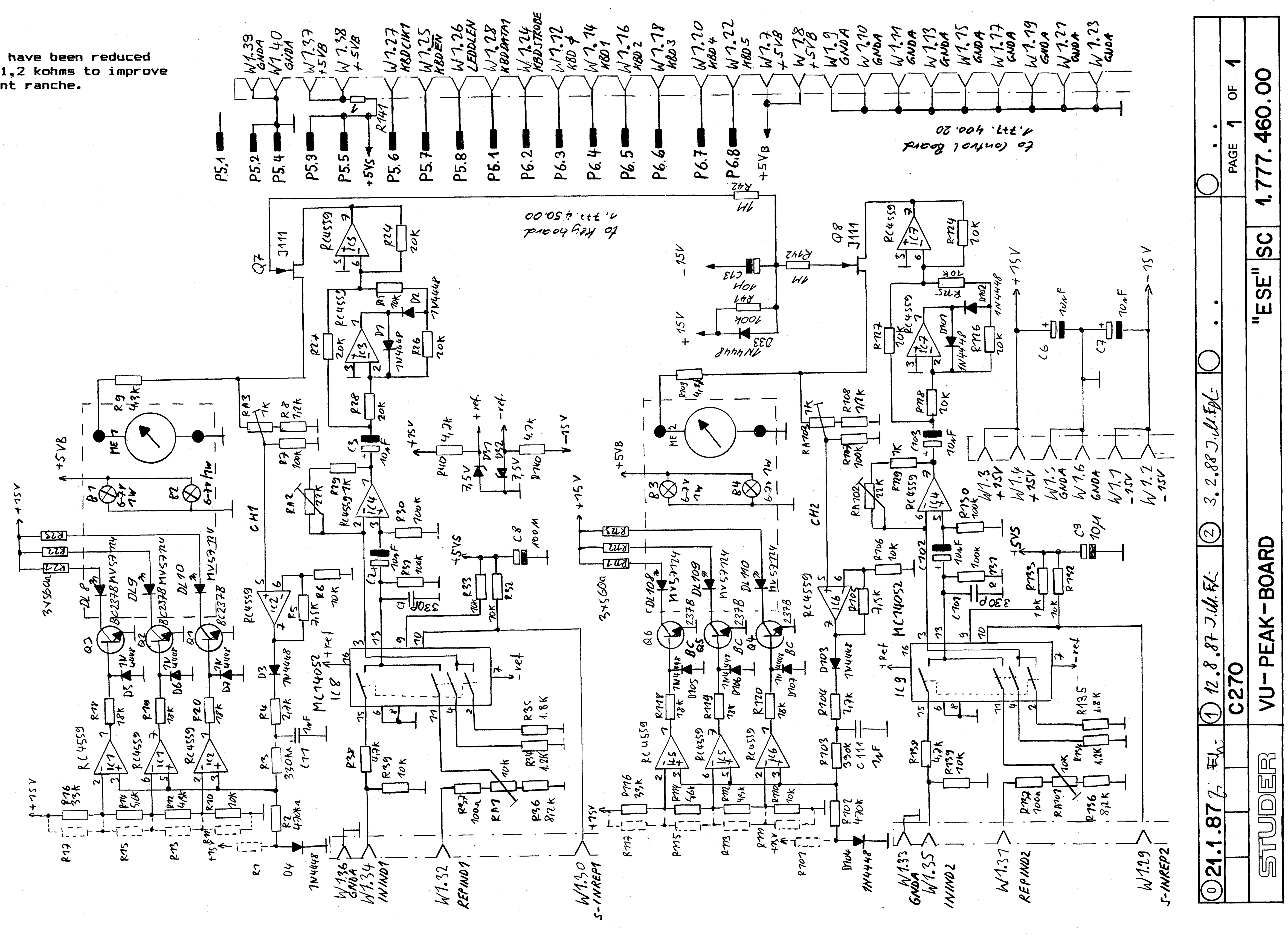
VU-PEAK BOARD 1.777.460.00

Note:
R34 and R134 have been reduced
from 1,8 to 1,2 kohms to improve
the adjustment ranche.


to control Board 1.777.400.20
to Key board 1.777.450.00
CH1
CH2
ME1
ME2
Q7 J111
Q8 J111
IC8 MC14052
IC9 MC14052
P5.1
P5.2
P5.4
P5.3
P5.5
P5.6
P5.7
P5.8
P6.1
P6.2
P6.3
P6.4
P6.5
P6.6
P6.7
P6.8
+5VB
+5VS
+15V
-15V
W1.34 ININD1
W1.32 REPIND1
W1.30 S-INREP1
W1.35 ININD2
W1.37 REPIND2
W1.29 S-INREP2
21.1.87
12.8.87
3.2.88
C270
VU-PEAK-BOARD
"ESE" SC
1.777.460.00
PAGE 1 OF 1
STUDER

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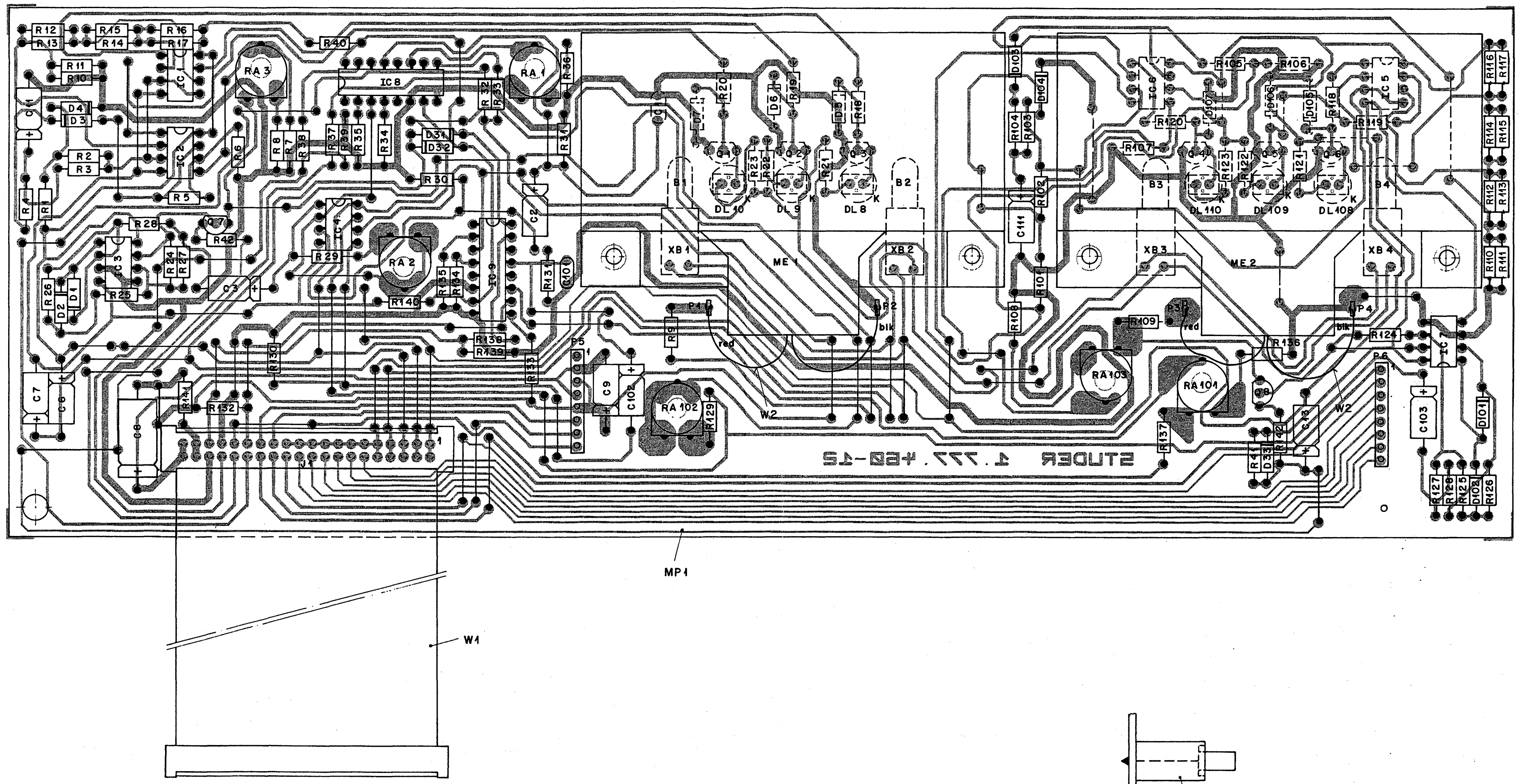
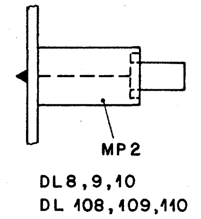
VU-PEAK BOARD 1.777.460.00


R12
R13
R15
R14
R16
R17
R11
R10
R40
IC8
RA3
RA1
R36
IC1
D4
D3
C1
IC2
R2
R3
R5
R8
R7
R6
R39
R37
R35
R34
D31
D32
R32
R33
R31
R30
R4
R1
R28
R42
IC4
R29
RA2
IC9
C2
C3
R26
R24
R27
R25
D2
D1
IC3
R140
R35
R34
R131
C101
R138
R139
R133
R130
R134
R132
C7
C6
C8
J1
P5
C9
C102
RA102
R129
R9
P1
red
P2
blk
W2
R20
R19
R18
R23
R22
R21
D6
D8
DL10
DL9
DL8
B1
B2
XB1
XB2
ME1
STUDER 1.777.460-12
D103
D104
R104
R103
R102
C111
R101
R100
IC6
R105
R106
R120
R107
R123
R122
R121
R118
R119
IC5
DL110
DL109
DL108
B3
B4
XB3
XB4
ME2
R116
R117
R114
R115
R112
R113
R110
R111
R109
R3
P3
red
P4
blk
R136
R124
IC
RA103
RA101
P6
C103
D101
R137
R142
R141
D33
R127
R128
R125
D102
R126
W2
MP1
W1


MP2
DL8,9,10
DL 108,109,110

PUBLISHED 01/88

VU-PEAK BOARD 1.777.460.00

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	B..0001	51.02.0143	6 V	.166A, W2÷4.6D	Osram
	B..0002	51.02.0143	6 V	.166A, W2÷4.6D	Osram
	B..0003	51.02.0143	6 V	.166A, W2÷4.6D	Osram
	B..0004	51.02.0143	6 V	.166A, W2÷4.6D	Osram
(00)	C..0001	59.34.8331	330 P	2%, N750 , CER	
(01)	C..0001	59.34.4331	330 P	5%, N750 , CER	
	C..0002	59.25.4100	10 U	-20%, 25V , EL	
	C..0003	59.25.4100	10 U	-20%, 25V , EL	
	C..0006	59.25.4100	10 U	-20%, 25V , EL	
	C..0007	59.25.4100	10 U	-20%, 25V , EL	
	C..0008	59.25.2101	100 U	-20%, 10V , EL	
	C..0009	59.25.4100	10 U	-20%, 25V , EL	
	C..0011	59.25.7109	1 U	-20%, 100V , EL	
	C..0013	59.25.4100	10 U	-20%, 25V , EL	
(00)	C..0101	59.34.8331	330 P	2%, N750 , CER	
(01)	C..0101	59.34.4331	330 P	5%, N750 , CER	
	C..0102	59.25.4100	10 U	-20%, 25V , EL	
	C..0103	59.25.4100	10 U	-20%, 25V , EL	
	C..0111	59.25.7109	1 U	-20%, 100V , EL	
	D..0001	50.04.0125		1N 4448 , SI	Ph,SES,ITT,Fc
	D..0002	50.04.0125		1N 4448 , SI	
	D..0003	50.04.0125		1N 4448 , SI	
	D..0004	50.04.0125		1N 4448 , SI	
	D..0005	50.04.0125		1N 4448 , SI	
	D..0006	50.04.0125		1N 4448 , SI	
	D..0007	50.04.0125		1N 4448 , SI	
	D..0031	50.04.1103	7.5 V	5%, .40W , Z	ITT,Mot,Ph
	D..0032	50.04.1103	7.5 V	5%, .40W , Z	
	D..0033	50.04.0125		1N 4448 , SI	
	D..0101	50.04.0125		1N 4448 , SI	
	D..0102	50.04.0125		1N 4448 , SI	
	D..0103	50.04.0125		1N 4448 , SI	
	D..0104	50.04.0125		1N 4448 , SI	
	D..0105	50.04.0125		1N 4448 , SI	
	D..0106	50.04.0125		1N 4448 , SI	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	D..0107	50.04.0125		1N 4448 , SI	
	DL.0008	50.04.2119		LTL33221A,MV 57124	Lin,GI,NS
	DL.0009	50.04.2119		LTL33221A,MV 57124	
	DL.0010	50.04.2119		LTL33221A,MV 57124	
	DL.0108	50.04.2119		LTL33221A,MV 57124	
	DL.0109	50.04.2119		LTL33221A,MV 57124	
	DL.0110	50.04.2119		LTL33221A,MV 57124	
	IC.0001	50.09.0107		RC 4559 NB, UPC 4559	Ra
	IC.0002	50.09.0107		RC 4559 NB, UPC 4559	
	IC.0003	50.09.0107		RC 4559 NB, UPC 4559	
	IC.0004	50.09.0107		RC 4559 NB, UPC 4559	
	IC.0005	50.09.0107		RC 4559 NB, UPC 4559	
	IC.0006	50.09.0107		RC 4559 NB, UPC 4559	
	IC.0007	50.09.0107		RC 4559 NB, UPC 4559	
	IC.0008	50.07.0024		MC 14052 BCP, 4052 BCP ,A	Mot
	IC.0009	50.07.0024		MC 14052 BCP, 4052 BCP ,A	
(00)	ME.0001	1.727.360.01		VU-METER	St
(01)	ME.0001	1.777.460.01		VU-METER	St
(00)	ME.0002	1.727.360.01		VU-METER	St
(01)	ME.0002	1.777.460.01		VU-METER	St
(00)	MP.0001	1.777.460.11		VU-PEAK PCB	St
(01)	MP.0001	1.777.460.11		VU-PEAK PCB -(1)	St
(02)	MP.0001	1.777.460.12		VU-PEAK PCB	St
(00)	MP.0002	1.777.460.02			St
(01)	MP.0002	1.777.460.03	6 pcs	LED-HOLDER	
	OP.0001	54.02.0320		FLAT PIN	AMP
	OP.0002	54.02.0320		FLAT PIN	AMP
	OP.0003	54.02.0320		FLAT PIN	AMP
	OP.0004	54.02.0320		FLAT PIN	AMP
	P..0005	54.11.0129	8 pcs	H=5.72/12.7	Berg
	P..0006	54.11.0129	8 pcs	H=5.72/12.7	Berg

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	Q..0001	50.03.0436		BC 547 B, BC 237 B	Sie,Ph,Mot
	Q..0002	50.03.0436		BC 547 B, BC 237 B	
	Q..0003	50.03.0436		BC 547 B, BC 237. B	
	Q..0004	50.03.0436		BC 547 B, BC 237 B	
	Q..0005	50.03.0436		BC 547 B, BC 237 B	
	Q..0006	50.03.0436		BC 547 B, BC 237 B	
	Q..0007	50.03.0216		J 111 ,A	NS,Mot,Six
	Q..0008	50.03.0216		J 111 ,A	NS,Mot,Six
	R..0001			not connected	
	R..0002	57.11.4474	470 K	2%, 0207 , MF	
	R..0003	57.11.4334	330 K	2%, 0207 , MF	
	R..0004	57.11.4272	2.7 K	2%, 0207 , MF	
	R..0005	57.11.3752	7.5 K	1%, 0207 , MF	
	R..0006	57.11.4103	10 K	2%, 0207 , MF	
	R..0007	57.11.4104	100 K	2%, 0207 , MF	
	R..0008	57.11.4122	1.2 K	2%, 0207 , MF	
	R..0009	57.11.3432	4.3 K	1%, 0207 , MF	
	R..0010	57.11.4103	10 K	2%, 0207 , MF	
	R..0011			not connected	
	R..0012	57.11.3432	4.3 K	1%, 0207 , MF	
	R..0013			not connected	
	R..0014	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0015			not connected	
	R..0016	57.11.4333	33 K	2%, 0207 , MF	
	R..0017			not connected	
	R..0018	57.11.4183	18 K	2%, 0207 , MF	
	R..0019	57.11.4183	18 K	2%, 0207 , MF	
	R..0020	57.11.4183	18 K	2%, 0207 , MF	
	R..0021	57.11.4561	560	2%, 0207 , MF	
	R..0022	57.11.4561	560	2%, 0207 , MF	
	R..0023	57.11.4561	560	2%, 0207 , MF	
	R..0024	57.11.3203	20 K	1%, 0207 , MF	
	R..0025	57.11.4103	10 K	2%, 0207 , MF	
	R..0026	57.11.3203	20 K	1%, 0207 , MF	
	R..0027	57.11.3203	20 K	1%, 0207 , MF	
	R..0028	57.11.3203	20 K	1%, 0207 , MF	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0029	57.11.4102	1 K	2%, 0207 , MF	
	R..0030	57.11.4104	100 K	2%, 0207 , MF	
	R..0031	57.11.4104	100 K	2%, 0207 , MF	
	R..0032	57.11.4103	10 K	2%, 0207 , MF	
	R..0033	57.11.4103	10 K	2%, 0207 , MF	
(00)	R..0034	57.11.3911	910	1%, 0207 , MF	
(01)	R..0034	57.11.4182	1.8 K	2%, 0207 , MF	
(03)	R..0034	57.11.4122	1.2 K	2%, 0207 , MF	
(00)	R..0035	57.11.4103	10 K	2%, 0207 , MF	
(01)	R..0035	57.11.4182	1.8 K	2%, 0207 , MF	
(00)	R..0036	57.11.4822	8.2 K	2%, 0207 , MF	
(04)	R..0036	57.11.4472	4.7 K	2%, 0207 , MF	
(05)	R..0036	57.11.3332	3.3 K	1%, 0207 , MF	
	R..0037	57.11.4101	100	2%, 0207 , MF	
	R..0038	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0039	57.11.4103	10 K	2%, 0207 , MF	
	R..0040	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0041	57.11.4104	100 K	2%, 0207 , MF	
	R..0042	57.11.4105	1 M	2%, 0207 , MF	
	R..0101			not connected	
	R..0102	57.11.4474	470 K	2%, 0207 , MF	
	R..0103	57.11.4334	330 K	2%, 0207 , MF	
	R..0104	57.11.4272	2.7 K	2%, 0207 , MF	
	R..0105	57.11.3752	7.5 K	1%, 0207 , MF	
	R..0106	57.11.4103	10 K	2%, 0207 , MF	
	R..0107	57.11.4104	100 K	2%, 0207 , MF	
	R..0108	57.11.4122	1.2 K	2%, 0207 , MF	
	R..0109	57.11.3432	4.3 K	1%, 0207 , MF	
	R..0110	57.11.4103	10 K	2%, 0207 , MF	
	R..0111			not connected	
	R..0112	57.11.3432	4.3 K	1%, 0207 , MF	
	R..0113			not connected	
	R..0114	57.11.4562	5.6 K	2%, 0207 , MF	
	R..0115			not connected	
	R..0116	57.11.4333	33 K	2%, 0207 , MF	
	R..0117			not connected	
	R..0118	57.11.4183	18 K	2%, 0207 , MF	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R..0119	57.11.4183	18 K	2%, 0207 , MF	
	R..0120	57.11.4183	18 K	2%, 0207 , MF	
	R..0121	57.11.4561	560	2%, 0207 , MF	
	R..0122	57.11.4561	560	2%, 0207 , MF	
	R..0123	57.11.4561	560	2%, 0207 , MF	
	R..0124	57.11.3203	20 K	1%, 0207 , MF	
	R..0125	57.11.4103	10 K	2%, 0207 , MF	
	R..0126	57.11.3203	20 K	1%, 0207 , MF	
	R..0127	57.11.3203	20 K	1%, 0207 , MF	
	R..0128	57.11.3203	20 K	1%, 0207 , MF	
	R..0129	57.11.4102	1 K	2%, 0207 , MF	
	R..0130	57.11.4104	100 K	2%, 0207 , MF	
	R..0131	57.11.4104	100 K	2%, 0207 , MF	
	R..0132	57.11.4103	10 K	2%, 0207 , MF	
	R..0133	57.11.4103	10 K	2%, 0207 , MF	
(00)	R..0134	57.11.3911	910	1%, 0207 , MF	
(01)	R..0134	57.11.4182	1.8 K	2%, 0207 , MF	
(03)	R..0134	57.11.4122	1.2 K	2%, 0207 , MF	
(00)	R..0135	57.11.4103	10 K	2%, 0207 , MF	
(01)	R..0135	57.11.4182	1.8 K	2%, 0207 , MF	
(00)	R..0136	57.11.4822	8.2 K	2%, 0207 , MF	
(04)	R..0136	57.11.4472	4.7 K	2%, 0207 , MF	
(05)	R..0136	57.11.3332	3.3 K	1%, 0207 , MF	
	R..0137	57.11.4101	100	2%, 0207 , MF	
	R..0138	57.11.4472	4.7 K	2%, 0207 , MF	
	R..0139	57.11.4103	10 K	2%, 0207 , MF	
	R..0140	57.11.4472	4.7 K	2%, 0207 , MF	
(00)	R..0141	57.11.4279	2.7	2%, 0207 , MF	
(01)	R..0141	57.11.4109	1	2%, 0207 , MF	
	R..0142	57.11.4105	1 M	2%, 0207 , MF	
(00)	RA.0001	58.02.5103	10 K	20%,.1 W , PCSCH	
(05)	RA.0001	58.02.5473	47 K	20%,.1 W , PCSCH	
	RA.0002	58.02.5223	22 K	20%,.1 W , PCSCH	
	RA.0003	58.02.5102	1 K	20%,.1 W , PCSCH	
(00)	RA.0101	58.02.5103	10 K	20%,.1 W , PCSCH	
(05)	RA.0101	58.02.5473	47 K	205,.1 W , PCSCH	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	RA.0102	58.02.5223	22 K	20%,.1 W , PCSCH	
	RA.0103	58.02.5102	1 K	20%,.1 W , PCSCH	
	W..0001	1.777.810.03		FLATCABLE KEYBOARD	St
(01)	W..0002	1.777.460.93	2 pcs	WL-VU-PEAK-BOARD	St
	XB.0001	53.04.0107	W2÷4.6	PRINT	Alwega
	XB.0002	53.04.0107	W2÷4.6	PRINT	Alwega
	XB.0003	53.04.0107	W2÷4.6	PRINT	Alwega
	XB.0004	53.04.0107	W2÷4.6	PRINT	Alwega

(01) 12.08.87 Value adjust
(02) 15.11.87 PCB Revise
(03) 03.02.88 Value adjust
(04) 22.04.88 Value adjust
(05) 01.12.88 Value adjust

MANUFACTURER: Mot=Motorola, NS=National Semiconductors, Ph=Philips
ITT=Intermetall,St=Studer,Sie=Siemens,Ra=Raytheon
Lin=Litton,GI=General Instruments,Fc=Fairchild.
Ses=Sescosem,Six=Siliconix,AMP=AMP Incorporated

ORIG 86/09/19 (01) 87/08/12 (02) 87/11/15 (03) 88/02/03 (04) 88/04/22
(05) 88/12/01

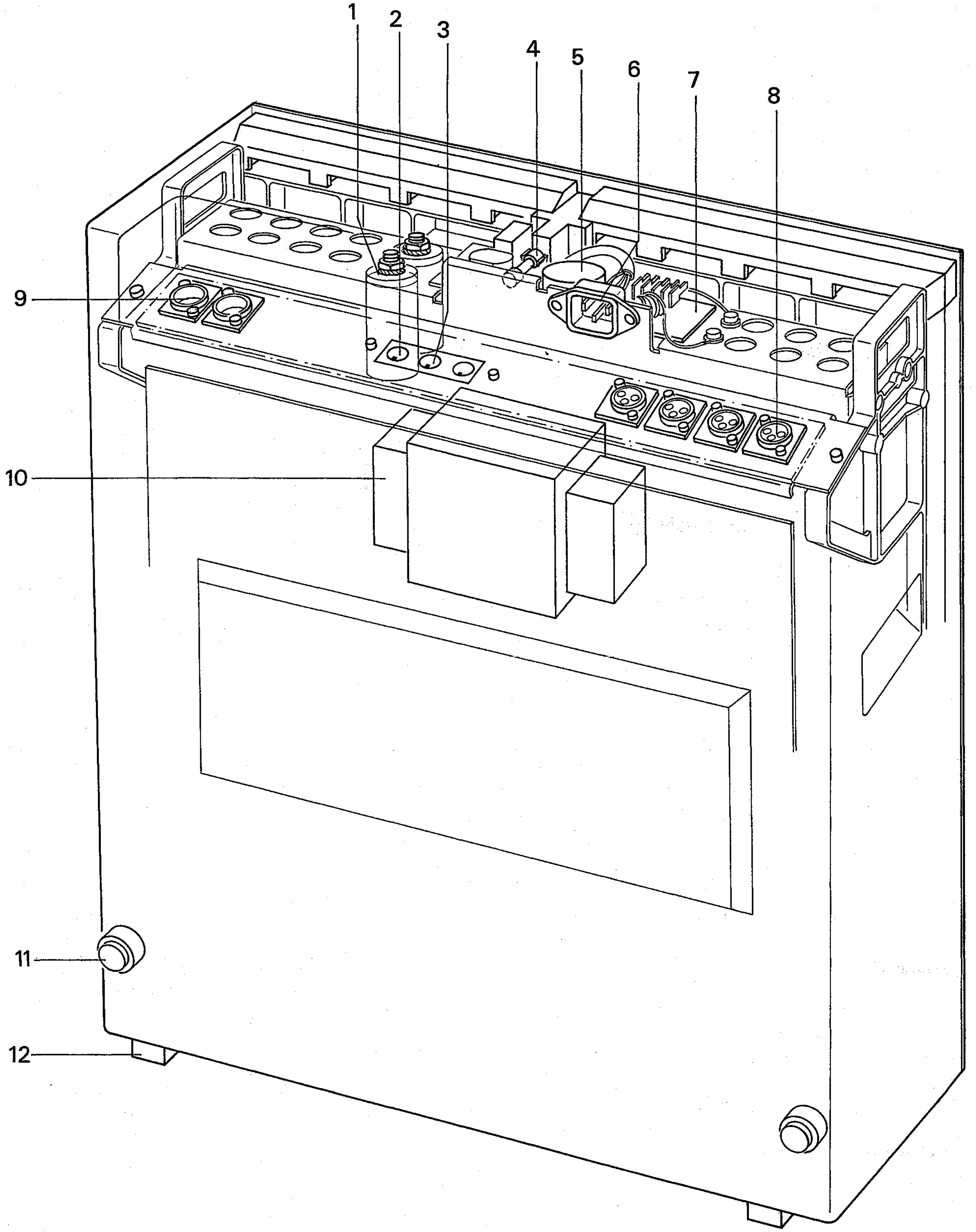
PUBLISHED 5/89

7. ERSATZTEILLISTEN / SPARE PARTS LISTS

INHALT **Seite**

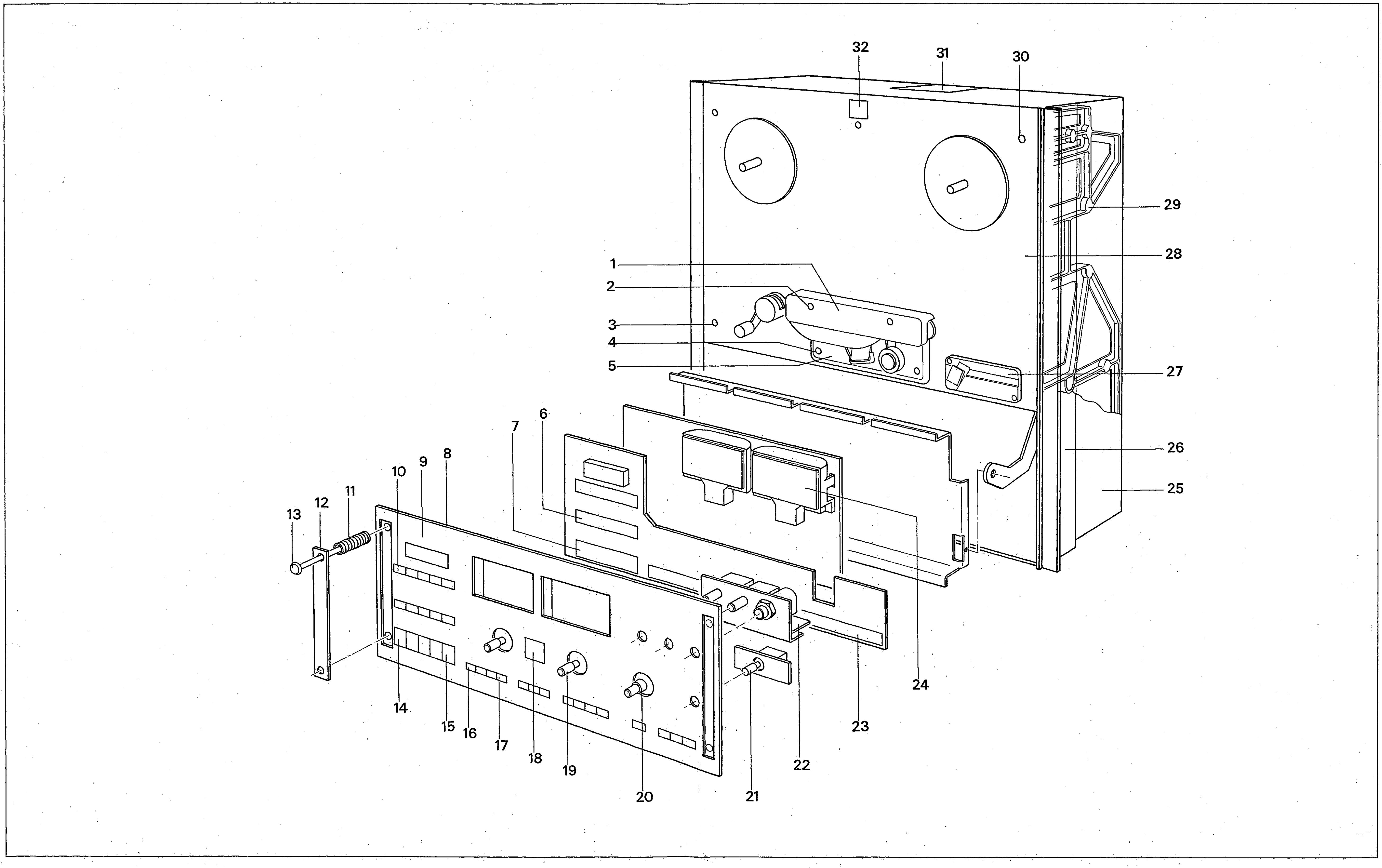
ANSCHLUSSFELD / TERMINAL BOARD 7/1
BEDIENEINHEIT / FRONTPANEL 7/2
BANDZUGWAAGE / TAPE TENSION SENSOR 7/4
BANDBREMSE / BRAKE CHASSIS 7/6
KOPFTRAEGER / HEAD CHASSIS 7/8
ANDRUCKAGGREGAT UND BANDABHEBUNG / ROLLER ASSEMBLY 7/10

7.1 ANSCHLUSSFELD / TERMINAL BOARD



POS	QTY	ORDER NUMBER	PART NAME SPECIFICATION
1	2	59.14.6809	Capacitor 8µF 240V
2	2	54.20.2003	Socket DIN 8p. PCB mount
3	1	54.21.1247	Socket DIN 7p. PCB mount
4	1	51.01.0116	Fuse 0,8 A
	1	51.01.0118	Fuse 1,25A
	1	51.01.0121	Fuse 2,5 A
5	1	53.03.0131	Voltage selector PCB
6	1	54.04.0109	Mains chassis socket 3p.
7	1	1.777.830.00	Connection unit
8	4	1.012.301.00	Chassis socket XLR femal
9	2	1.012.300.00	Chassis socket XLR
10	1	1.777.300.00	Mains transformer
11	4	1.777.010.11	Rubber foot
12	2	1.777.010.03	Rail / Feet

7.2 BEDIENEINHEIT / FRONTPANEL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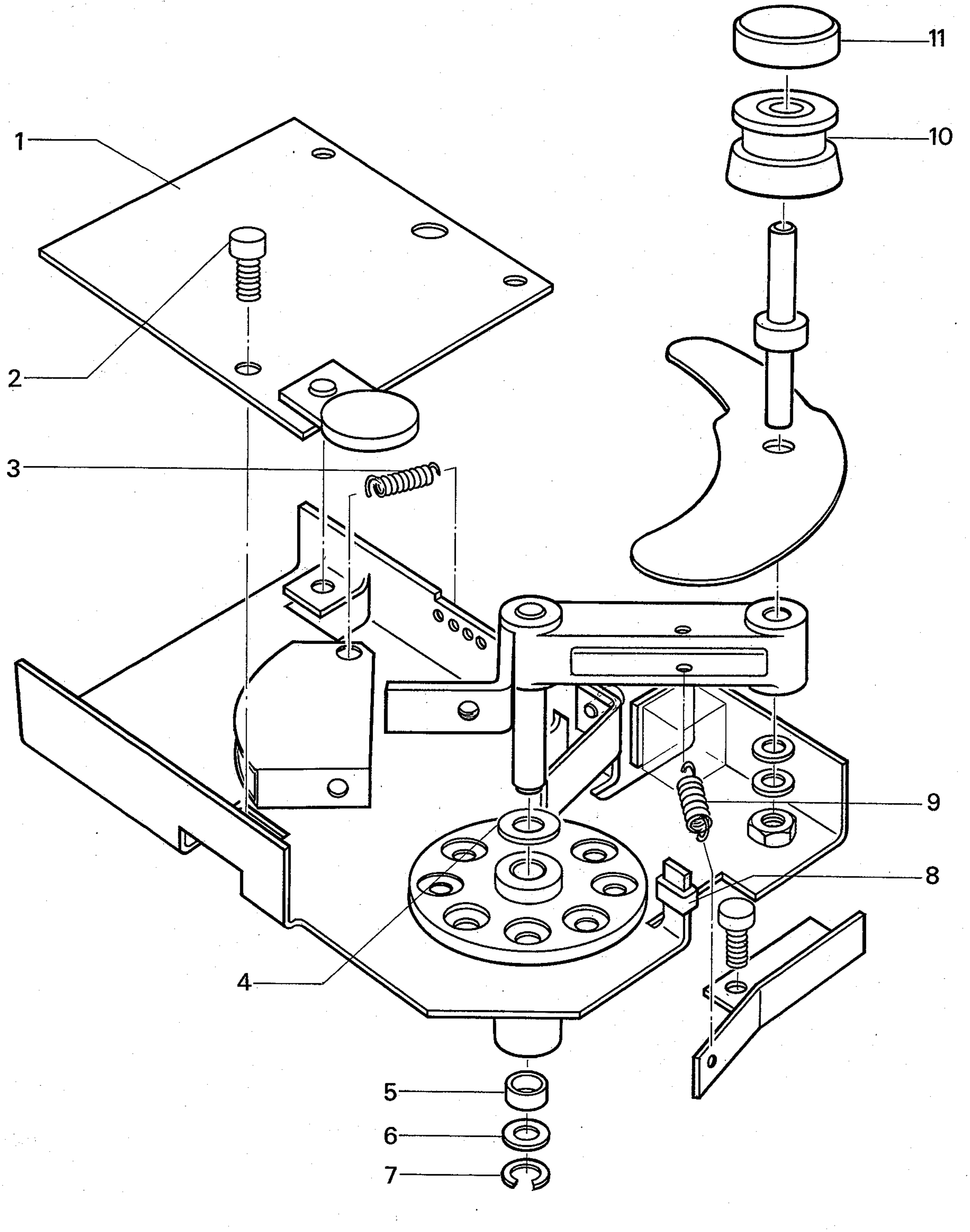
BEDIENEINHEIT / FRONTPANEL

POS	QTY	ORDER NUMBER	PART NAME SPECIFICATION
1	1	1.777.010.01	Cover / head support
2	2	1.080.142.10	Flat allen screw spec.
3	2	21.51.2455	Flat allen screw M4x8
4	2	21.51.2455	Flat allen screw M4x8
5	1	1.777.010.05	Cover small
6	2	1.777.100.27	Rubber mat 2
7	1	1.777.100.26	Rubber mat 1
8	1	1.777.100.21	Operating chassis
9	1	1.777.100.24	Designation plate
10	10	1.777.100.35	Pushbutton 3
11	4	1.010.053.37	Pressure spring
12	2	1.777.100.46	Handle
13	4	1.777.100.45	Screw spec.
14	4	1.777.100.34	Pushbutton 2
15	1	1.777.100.32	Pushbutton 2 red
16	2	1.777.100.31	Pushbutton 1 red
17	13	1.777.100.33	Pushbutton 1
18	1	71.01.0158	Loudspeaker monitor
19	2	1.777.450.02	Potentiometer 10k
	2	1.777.100.36	Knob rotary D.25
20	1	1.777.840.01	Rotary potentiometer
	1	1.777.100.36	Knob rotary D.25
	1	1.777.100.37	Knob rotary disc type
21	1	1.777.450.03	Potentiometer 50k
	1	1.777.100.38	Knob rotary D.15-6
22	1	1.777.462.00	Volume switch PCB
	1	1.725.810.02	Rotary switch
	1	1.777.100.38	Knob rotary D.15-6
	1	1.010.024.58	Potentiometer 5k
	1	1.777.100.48	Knob rottary D.15-4
	1	1.710.350.02	Jack socket
23	2	1.777.100.28	Rubber mat 3
24	2	1.777.460.01	VU-Meter
25	1	1.777.010.02	Cabinet
26	2	1.777.010.07	Bracket rack mount.
27	1	1.177.435.00	Tape cutter
28	1	1.777.011.00	Cover tape transport
29	2	1.777.100.03	Frame
30	3	21.51.2464	Flat allen screw M4x30
31	1	1.777.010.10	Cover/fuse/volt. sel.
32	1	55.03.0286	Power switch
	1	1.777.100.43	Pushbutton
	1	1.777.100.09	Insulating foil

7.3 BANDZUGWAAGE / TAPE TENSION SENSOR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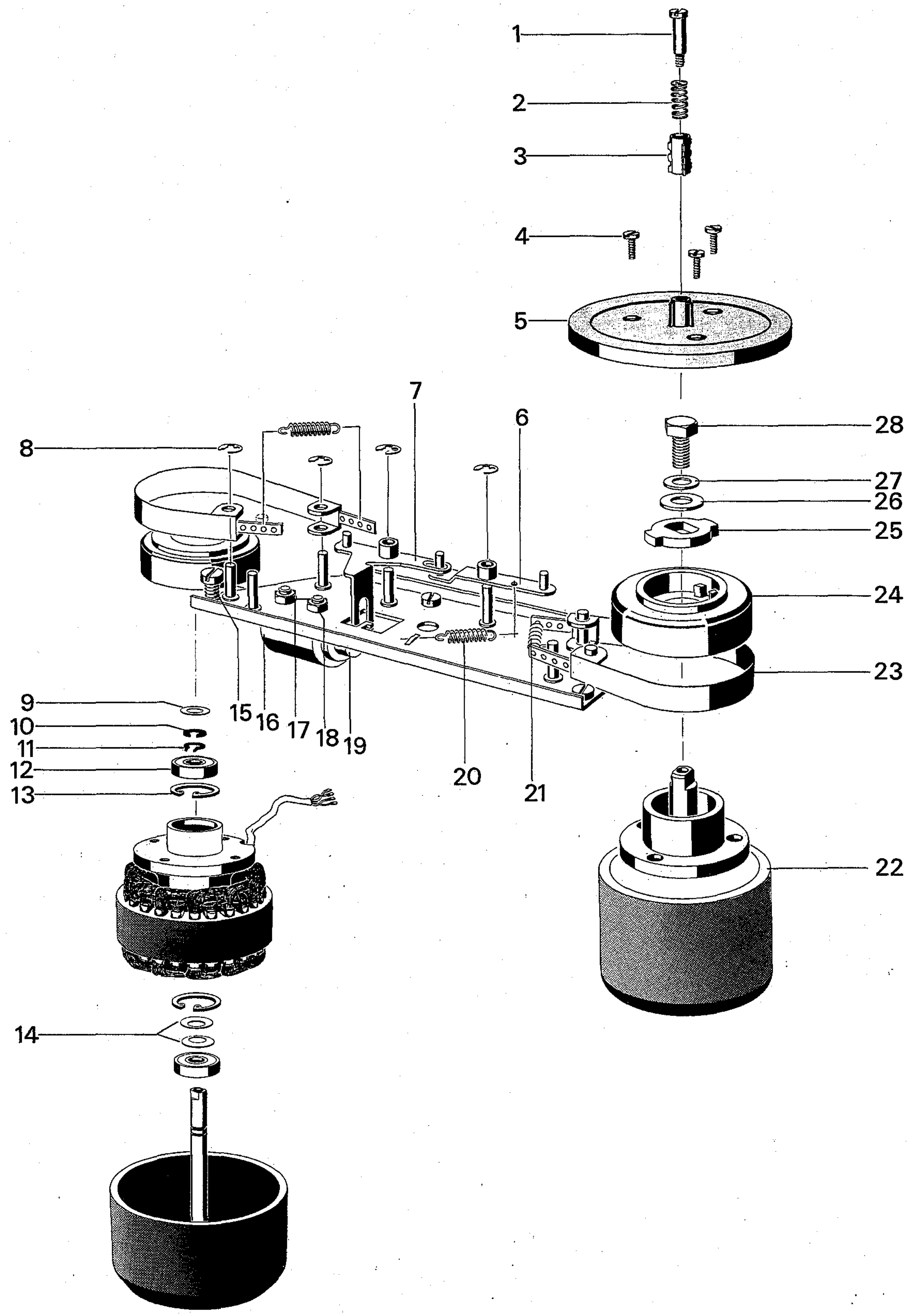
BANDZUGWAAGE / TAPE TENSION SENSOR

POS	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
	1	1.777.210.82	Tape tension sen. compl.	
1	1	1.777.211.00	PCB / Tape tension arm	
2	3	21.26.0277	Philips head screw	
3	1	1.077.100.13	Tension spring / brakes	
4	1	1.062.101.09	Washer	
5	1	1.777.222.03	Spacer	
6	1	1.062.101.07	Washer 0,1mm	
	1	1.062.101.08	Washer 0,2mm	
7	1	24.16.3040	Retaining clip	
8	1	1.177.100.16	Rubber ring	
9	1	1.010.134.37	Tension spring	
10	1	1.777.220.00	Roller compl.	
11	1	1.777.225.00	Cap compl.	

7.4 BANDBREMSE / BRAKE CHASSIS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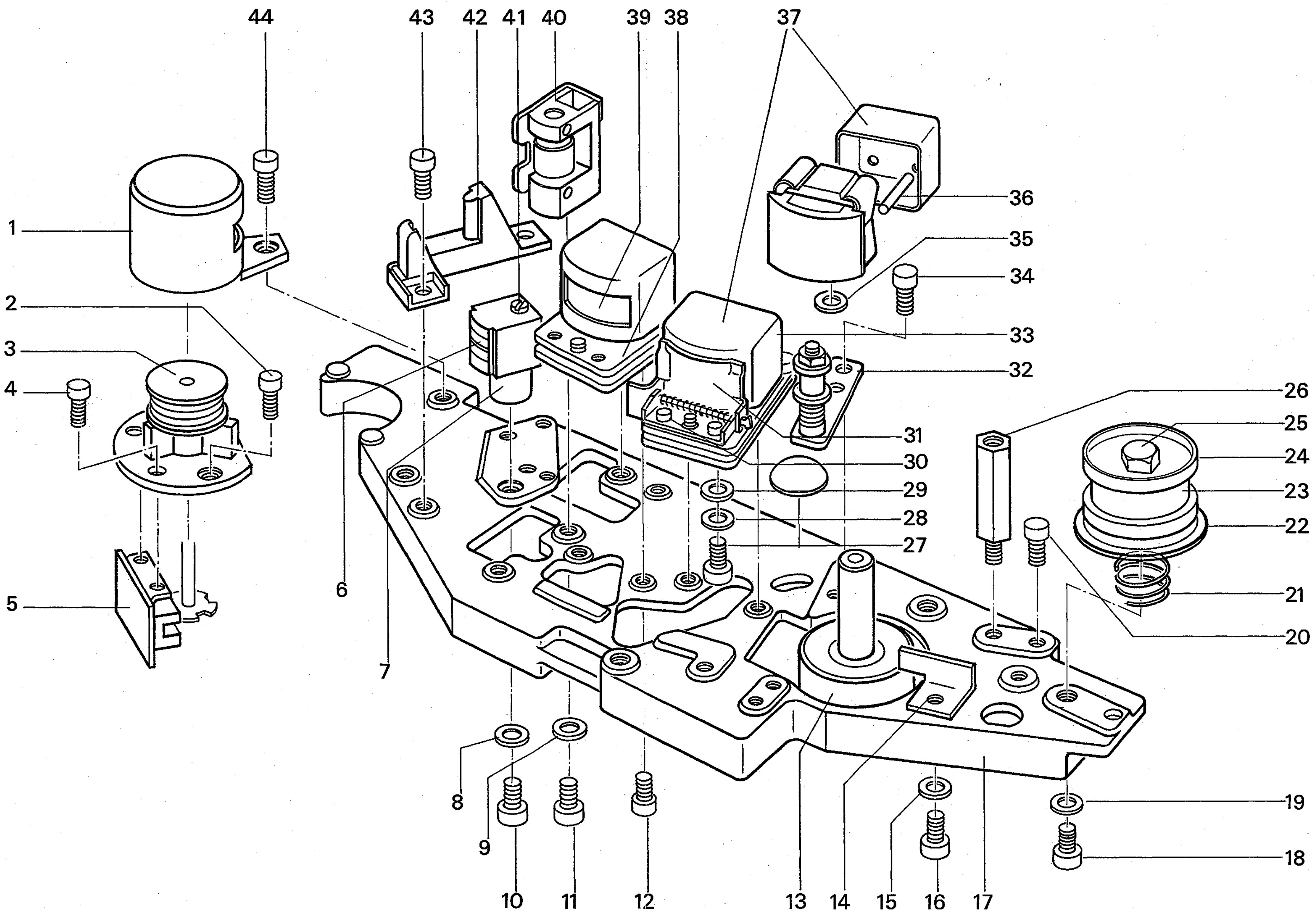
BANDBREMSE / BRAKE CHASSIS

POS	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
1	2	1.062.390.02	Shaft screw	
2	2	1.067.688.02	Lock spring/reel	
3	2	1.067.688.01	Guide sleeve	
4	6	21.38.0355	Philips head screw M3x8	
5	2	1.067.688.00	Turntable compl.	
6	1	1.077.415.00	Brake lever	
7	1	1.077.411.00	Brake lever	
8	6	24.16.3032	Circlip	
9	≈4	1.736.502.04	Washer 2mm	
	≈2	1.736.502.05	Washer 0,5mm	
10	1	1.021.256.04	Circlip	
11	1	24.16.5080	Retaining ring, external	
12	2	41.99.0105	Ball bearing	
13	2	24.16.4220	Retaining ring, internal	
14	4	37.02.0206	Cup washer	
15	3	21.26.0354	Screw M3x6	
16	1	1.014.852.00	Brake solenoid	
17	2	21.26.0353	Screw (M3x5 max.)	
18	2	23.01.2032	Washer M3	
19	1	1.014.854.00	Plunger brake solenoid	
20	1	1.062.210.06	Tension spring	
21	2	1.077.100.13	Tension spring	
22	1	1.021.220.00	Spooling motor	
23	2	1.077.421.00	Brake band compl.	
24	2	1.077.562.00	Brake drum	
25	2	1.067.100.27	Driver	
26	2	37.01.0103	Cup washer	
27	2	23.01.3043	Washer	
28	2	21.01.4455	Screw M4x8	

7.5 KOPFTRÄGER / HEAD CHASSIS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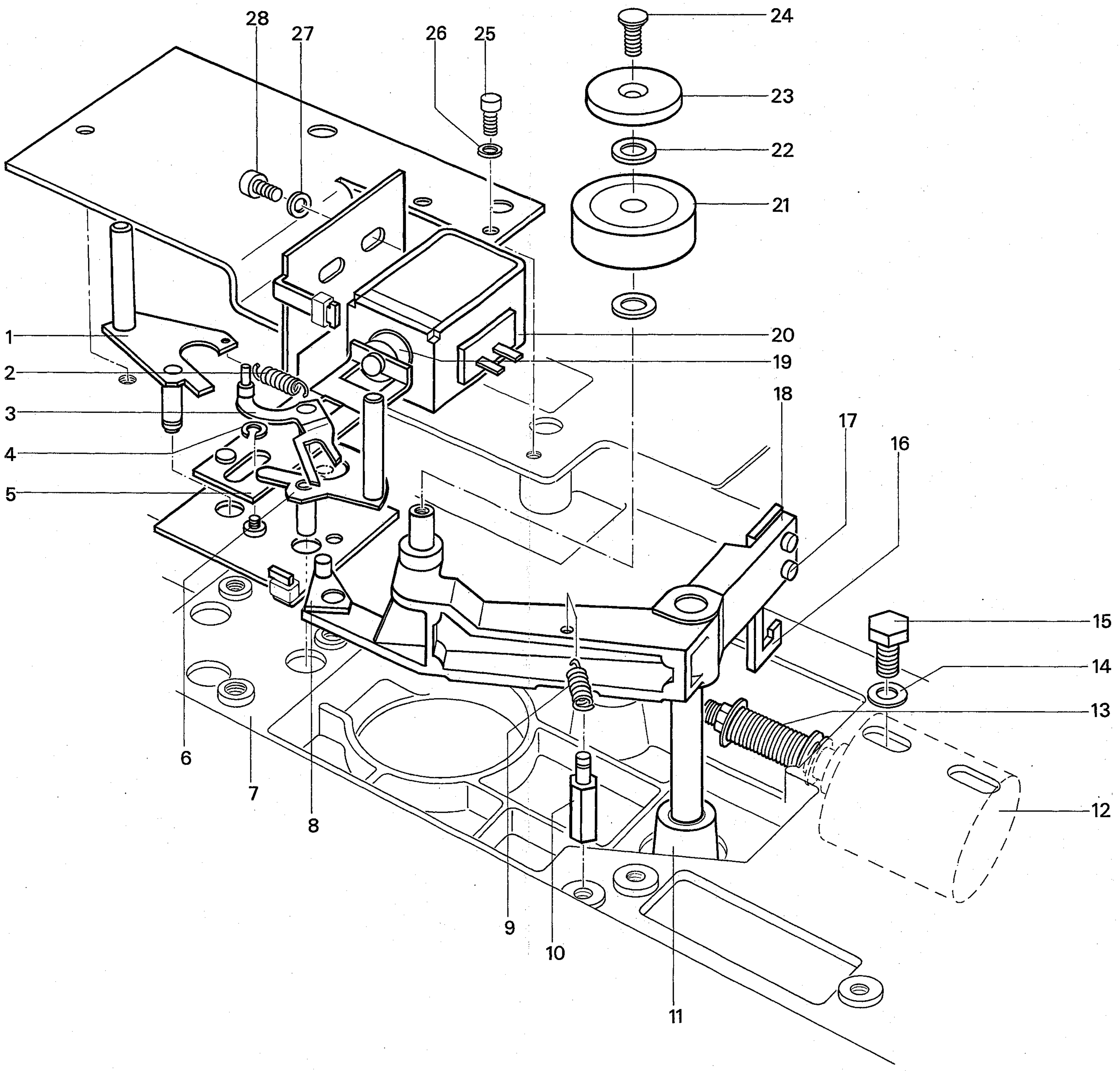
KOPFTRÄGER / HEAD CHASSIS

POS	QTY	ORDER NUMBER	PART NAME SPECIFICATION
1	1	1.050.300.03	Cover / Sensor
2	2	21.26.0353	Philips head screw M3x5
3	1	1.050.313.00	Counter sensor
4	2	21.26.0277	Phil. head screw M2,5x4
5	1	1.020.316.00	Counter move sensor PCB
6		1.116.089.04	Erase head 1/1-TRK
		1.116.098.04	Erase head 2/2-TRK
		1.116.099.04	Erase head 2/4-TRK
7	1	1.116.098.02	Bolt/Erase head
8	1	24.16.1040	Lock washer
9	1	24.16.1030	Lock washer
10	1	21.26.0455	Philips head screw M4x8
11	1	21.26.0356	Philips head screw M3x10
12	4	21.26.0354	Philips head screw M3x6
13	1	1.021.606.82	Capstan motor
14	1	1.777.100.18	Bracket
15	1	24.16.1030	Lock washer
16	1	21.26.0355	Philips head screw M3x8
17		1.050.300.00	Head chassis 2/2-TRK
		1.050.304.00	Head chassis 2/4-TRK
18	1	21.26.0456	Philips head screw M4x10
19	1	24.16.1040	Lock washer
20	3	21.26.0459	Philips head screw M4x18
21	1	1.010.077.37	Pres. spring 15,6x14,5
22	1	1.050.300.09	Cover
23	1	1.077.121.04	Ring plain
24	2	1.077.121.02	Cap guiding
25	1	1.050.300.04	Screw shoulder
26	2	1.010.148.27	Threaded pin M4x25
27	2	21.14.0355	Fillister screw M3x8
28	2	23.15.1032	Flat washer
29	2	24.16.1030	Lock washer
30	2	21.26.0201	Fillister screw M2x3
31	1	1.077.165.00	Lid shield playback head
32	2	1.077.145.01	Disc guide
	1	1.077.145.02	Sleeve spacer
	1	1.020.310.00	Support tape guide pin
	1	1.020.820.12	Pressure spring
	1	22.15.8030	Hex nut M3
33		1.116.017.00	Playback head 1/1-TRK
		1.116.027.00	Playback head 2/2-TRK
		1.116.047.00	Playback head 2/4-TRK
34	2	21.26.0354	Philips head screw M3x6
35	2	1.116.012.05	Washer
36	4	1.077.155.07	Plastic pin
37	2	1.077.155.05	Shield outer
	2	1.077.155.06	Shield inner
38	2	1.050.320.00	Light gate compl.
39		1.116.012.00	Record head 1/1-TRK
		1.116.022.00	Record head 2/2-TRK
		1.116.042.00	Record head 2/4-TRK
40	1	1.050.311.00	Idler roller
41	1	1.116.099.02	Mount. screw/Erase head
42	1	1.050.312.00	Light gate compl.
43	2	21.26.0353	Philips head screw M3x5
44	1	21.26.0354	Philips head screw M3x6

7.6 ANDRUCKAGGREGAT UND BANDABHEBUNG / ROLLER ASSEMBLY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ANDRUCKAGGREGAT UND BANDABHEBUNG / ROLLER ASSEMBLY

POS	QTY	ORDER NUMBER	PART NAME	SPECIFICATION
1	1	1.777.233.00	Lever left	
	1	24.16.3023	Retaining clip	
2	1	1.777.245.01	Tension spring	
3	1	1.777.234.00	Lever	
4	1	24.16.3032	Retaining clip	
5	1	1.777.235.00	Slider	
6	1	1.777.232.00	Lever right	
	1	24.16.3019	Shaft lock	
	1	24.16.3040	Retaining clip	
7	1	1.777.100.01	Tape transport chassis	
8	1	1.777.121.02	Dog pin	
9	1	1.010.133.37	Tension spring	
10	1	1.067.100.06	Pin / spring anchor	
11	1	1.177.125.00	Bearing pressure arm	
12	1	1.014.710.00	Solenoid	
13	1	1.777.122.00	Plunger	
14	2	24.16.1040	Lock washer	
15	2	21.01.4455	Head screw M4x8	
16	1	1.177.120.02	Lever	
17	2	21.26.0455	Philips head screw M4x8	
18	1	1.777.121.00	Pinch roller arm	
19	1	1.014.812.00	Plunger	
20	1	1.014.850.00	Solenoid	
21	1	1.167.178.82	Pinch roller	
22	2	1.736.200.04	Teflon spacer	
23	1	1.177.100.25	Cap pinch roller	
24	1	21.27.2355	Cross head screw	
25	3	21.26.0354	Philips head screw M3x6	
26	3	24.16.1030	Lock washer	
27	2	24.16.1030	Lock washer	
28	2	21.26.0353	Philips head screw M3x5	